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About the CD ROM

The accompanying CD ROM contains the one-page abstracts presented at the 22nd General Conference of the Condensed Matter Division of the European Physical Society (**CMD-22**) held at the Sapienza Università di Roma, Rome, Italy from 25 to 29 August 2008. For copyright information, please see the Copyright Notice (page 2). All abstracts are in .pdf format.

Instructions

Software requirements:
A web browser (Firefox, Internet Explorer, Safari or similar)
A .pdf viewer (tested with Adobe Acrobat). This software can be downloaded at no cost from:
http://www.adobe.com

Starting the CD ROM
The CD ROM has an auto run facility for Windows, and will start when inserted into your computer.
Should you wish to access the contents of the CD ROM other than through the auto run programme, access the CD ROM and click on the start.html icon.

Navigation
Navigating the contents of this CD ROM is similar to navigating a web page. The back and forward arrows are active.

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CMD-22 is organized in cooperation with

EPS Condensed Matter Division (CMD), Mulhouse, F

http://cmd.epsdivisions.org/
http://www.eps.org/

Sapienza Università di Roma, Rome, IT

http://www.uniroma1.it/

Scuola Normale Superiore, Pisa, IT

http://www.sns.it/

CNR - Consiglio Nazionale delle Ricerche (Institute for the Physics of Matter), IT
INFM - Istituto Nazionale per la Fisica della Materia (CNR - National Research Council), IT

http://www.cnr.it/
http://www.infm.it/

Europhysics Letters

https://www.epletters.net/
http://www.epljournal.org/

22nd General Conference of the Condensed Matter Division of the European Physical Society
25 - 29 August 2008, Sapienza Università di Roma, Rome, Italy

WELCOME to Rome and to the 22nd General Conference of the Condensed Matter Division of the European Physical Society (CMD-22)!

The conference provides a forum for presentations of research work across the full range of condensed matter physics to a wide international audience. It is held every two years since the very first one held in Antwerp in 1980. The format of the meeting will be similar to the most recent ones in the series, held in Prague 2004 and in Dresden 2006.

The conference will also host a special session for the **14th General Conference of the European Physical Society** to be held on **Wednesday afternoon, 27 August 2008**.

The conference programme will include plenary talks, oral sessions including invited and contributed presentations with up to seven parallel sessions, and ample time for poster sessions. The conference should offer space for discussing both novel and established topics, including selected important areas of condensed matter physics.

The conference is dedicated to the memory of the late Co-chair **Massimo Sancrotti**, Università Cattolica di Brescia, and Laboratorio TASC INFM-CNR Trieste, Italy.

The whole programme will focus on the following sessions:
• Semiconductor Physics
• Surfaces, Interfaces, and Low-Dimensional Physics
• Magnetism
• Superconductivity and Highly-Correlated Systems
• Liquids, Disordered and Off-Equilibrium Systems
• Polymer Physics
• Biological Physics and Life Sciences
• Materials
• Methods for Cultural Heritage and Vacuum Science
• Physics of Socio-Economic and Complex Systems

The conference will also host an exhibition involving international companies.

We hope that you will enjoy the unique beauty of Rome, the programme, and the opportunity to spend time with colleagues from around the globe.

Sincerely,

Lucia Sorba, *Scuola Normale Superiore, Pisa and CNR-INFM, Italy*
Chair

Carlo Mariani, *Sapienza Università di Roma, Rome, and CNR-INFM, Italy*
Eoin O'Reilly, *Tyndall National Institute, Cork, Ireland and Chair of the EPS Condensed Matter Division*
Co-Chairs

Conference Topics

Semiconductor Physics
1. Quantum dot and wires
2. Photonic crystals
3. Spin-controlled transport
4. Bose-Einstein condensation in semiconductors
5. THz interaction
6. Semiconductor Lasers
7. Theory of electronic structures
8. Transport and optics in high magnetic fields /QHE
9. Ultra-fast phenomena
10. Quantum optics in condensed matter
11. Quantum transport for quantum information
12. Condensed matter with cold atoms
13. Carbon/diamond
14. Graphene: electronic properties and transport
15. Graphene: structural stability and dynamics (shared with Materials)
16. Graphite for fusion reactors

Surface, Interface and Low-dimensional Physics
1. Electronic properties of surfaces and low dimensional systems
2. Magnetic properties of surfaces and nanostructures
3. Surface Structure and Dynamics
4. Self-assembled organic layers
5. Spontaneous nanopattering at surfaces
6. Small particles and clusters
7. Atomic manipulation
8. Tribology and friction
9. Liquid-solid an liquid-gas interfaces
10. Oxide surfaces
11. Organic interfaces and heterostructures
12. Adsorption and reaction on metal and oxide surfaces
13. Adsorption on semiconductors
14. Biological-inorganic interfaces
15. Graphene: electronic properties
16. Nanowires

Magnetism
1. Magneto-electronics and spintronics (GMR, TMR, Hall effect, magneto-impedance, spin transfer torque, spin injection, dynamics), data storage and logic devices (MRAM, spin-torque devices, domain-wall devices)
2. Magnetic nanoparticles and granular materials (nanoparticles, magnetic nanocomposites)
3. Clusters and low dimensional magnetism (Size effect on orbital moment, quantum effects)
4. Magnetoelectronic materials (magnetoresistive oxides, multiferroic materials, magnetic semiconductors)
5. Strongly correlated electron systems, NFL behavior, coexistence of magnetism and superconductivity
6. Magnetic versus structural and other physical effects associated with magnetic phase transitions (magnetocaloric systems, magnetic phase transitions, phase separation)
7. Structured Materials (ultra-thin films and surface effects, multi-layer films and superlattices, patterned films, nanoparticles and self-assembling)
8. Applications and interdisciplinary topics, magnetic applications in medicine, biomagnetic applications, novel applications

Superconductivity and Highly-Correlated Systems
1. Heavy fermions
2. Quantum critical phenomena
3. High Tc superconductivity
4. New materials with strong correlations
5. Quantum spin systems
6. Theoretical methods for many body computation
7. Spectroscopy: very low and very high energy
8. Electronic properties under extreme conditions
9. Dynamical properties from time-resolved experiments
10. Graphene

Liquids, Disordered and Off-Equilibrium Systems
1. Simple liquids
2. Molecular Liquids
3. Liquid Metals
4. Ionic liquids
5. Quantum Fluids
6. Water and aqueous solutions
7. Hydrogen bonded liquids
8. Liquid crystals
9. Polymers, polyelectrolytes, and biopolymers
10. Colloids
11. Films, foams, and surfactants
12. Confined liquids and interfacial phenomena
13. Supercooled liquids, glass transition, glasses, and gels
14. Off-equilibrium and aging systems: fluctuations and effective temperature
15. Phase transitions, nucleation and heterogeneities
16. Complex rheology
17. Biological and biomimetic fluids
18. Spin glasses
19. Optimisation problems
20. Classical and Quantum glassiness
21. Granular materials and jamming
22. Quenched disorder effects

Polymer Physics
1. Polymer solutions
2. Polyelectrolyte systems
3. Polymer crystallization
4. Polymers at surfaces and interfaces
5. Polymer dynamics in confinement
6. The glass transition of polymer melts
7. Microphase separation in copolymers

8. Polymer-based nano-composites
9. Phase transitions, structure and response of single macromolecules
10. Advanced simulation methods in polymer science
11. Simulations of polymer rheology
12. Polymer conformations under out-of-equilibrium conditions
13. Ordering processes of complex macromolecules

Biological Physics /Life Sciences
1. Single bio-molecule
2. Quantum effects in biological systems
3. Biological networks
4. Biophysics of biological membranes
5. Ion and water channels
6. Quantum effects in biological systems
7. Nano-mechanical response of cells
8. Biosensors
9. Force spectroscopy in biology
10. Laser tweezers in biology
11. Optical spectroscopy in biophysics
12. Biological redox systems
13. Biophysical studies of nucleid acids
14. Nanotechnology and stem cells
15. Time-resolved biophysics
16. Biophysics and synchrotron radiation
17. FEL applications to biological systems

Materials
1. Carbon nanotubes and spatial ordering in macro/nanostructures.
2. Dynamics of quasicrystals.
3. Multiferroics.
4. Pairing symmetry and lattice effects in high-Tc superconductors.
5. Stability and dynamics of graphene.(shared with Semiconductor Physics)
6. Domains and textures.
7. Fundamental aspects of ferroelectricity.
8. Photo-induced phase transitions.
9. Physical properties of aperiodic crystals

Methods for Cultural Heritage and Vacuum Science
1. Chemical and physical methods for characterization of Cultural Heritage Materials (metals, ceramics, glass, etc)
2 . Coating and surface treatments for Cultural Heritage conservation
3 . Innovative diagnostics techniques
4 . Maintenance of the Cultural Heritage: Methodologies and Techniques
5 . Nanotechnology and Cultural Heritage
6 . Conservation and Restoration of Arts' Heritage (lapidary materials, pictures, ancient papers: drawings and printings, goldsmithery and glyptics, wooden sculptures, mural paintings)
7 . The recovery by means of diagnostics
8 . Vacuum processes and techniques and Cultural Heritage

Physics of Socio-Economic and Complex Systems
1. Agent-based modeling of financial markets
2. Fluctuations and correlations in financial time series
3. Empirical stylized facts of socio-economic systems
4. Models of heterogeneous interacting agents and Minority Games
5. Self-organization in socio-economic systems
6. Optimization problems of microeconomics
7. Static and evolutionary game theory
8. Systemic fragility and risk management
9. Economic growth and cycles
10. Networks in markets, trade and production
11. Agent-based modeling on networks
12. Dynamic processes on socio-economic networks
13. Fluctuation scaling in finance, and socio-economic systems
14. Ecosystems and competitive ecologies
15. Urban systems and traffic modeling
16. Peer-to-peer systems and communication networks
17. Social dynamics, opinion formation and decision making
18. Semiotic and language dynamic

Poster Sessions

Poster sessions for contributed papers have been a major attraction at recent conferences. The CMD-22 conference will present over 400 posters split into two poster sessions which will take place on **Tuesday 26 August and on Thursday 28 August 2008. Both sessions are scheduled from 16:30 to 18:40.** There will be no oral presentations during this time.

Tuesday 26 August 2008 Poster sessions:

Topic	Location
Magnetism	Rettorato – Main Building
Semiconductor Physics	Physics Department – Marconi Building
Surfaces, Interfaces, and Low-Dimensional Physics I	Physics Department – Marconi Building
Materials	Physics Department – Marconi Building
Methods for Cultural Heritage and Vacuum Science	Physics Department – Marconi Building

Thursday 28 August 2008 Poster sessions:

Topic	Location
Superconductivity and Highly-Correlated Systems	Rettorato – Main Building
Surfaces, Interfaces, and Low-Dimensional Physics II	Physics Department – Marconi Building
Liquids, Disordered and Off-Equilibrium Systems	Physics Department – Marconi Building
Polymer Physics	Physics Department – Marconi Building

Biological Physics and Life Sciences	Physics Department – Marconi Building
Physics of Socio-Economic and Complex Systems	Physics Department – Marconi Building

Instructions for Poster Presenters

Each author is provided with one bulletin board measuring **90 cm wide x 120 cm high** on which to display a summary of the paper. Fixing material (tape) will be provided. The boards will be grouped by sessions and marked with the paper session code.
Authors are requested to put up their poster on their allocated board already in the morning of the day of their presentation. Authors must remain in the vicinity of their poster for the entire duration of the session to answer questions. Posters still in their places on the next morning will be removed and discarded by the conference organization.
The schedule of the poster sessions is presented on the respective pages of this programme.

Speakers' Information

The presentation times for oral sessions are as follows:
Contributed talks → 15 minutes presentation and 5 minutes for discussion
Invited talks → 30 minutes presentation and 10 minutes for discussion
Plenary talks → 40 minutes presentation and 5 minutes for discussion

Speakers are asked to check-in with the session chairman in the conference room ten minutes before the session begins.
A **speakers' information desk** will be operative during the conference for checking the presentations.
A PC with Windows XP, Power Point (for ppt format files) and Adobe Reader (for pdf format file) will be available in the conference room. Authors will transfer their oral presentation file by USB memory stick or CD-Rom.

Location of the oral sessions according to the topics

Oral sessions	Location
Magnetism	Aula 3 (Physics Department - Fermi Building)
Semiconductor Physics	Aula Amaldi (Physics Dept - Marconi Building)
Surfaces, Interfaces, and Low-Dimensional Physics	Aula Magna (Rettorato)
Materials	Aula 1 (Physics Department - Fermi Building)
Methods for Cultural Heritage and Vacuum Science	Aula 1 (Physics Department - Fermi Building)
Superconductivity and Highly-Correlated Systems	Aula 4 (Physics Department - Fermi Building)
Liquids, Disordered and Off-Equilibrium Systems	Aula 6 (Physics Department - Fermi Building)
Polymer Physics	Aula Conversi (Physics Dept- Marconi Building)
Biological Physics and Life Sciences	Aula Conversi (Physics Dept- Marconi Building)
Physics of Socio-Economic and Complex Systems	Aula 6 (Physics Department - Fermi Building)
EPS-14	Aula Magna (Rettorato)

EPS-14: 14th General Conference of the European Physical Society

The 14th General Conference of the European Physical Society will take place **on Wednesday, 27 August 2008** within the 22nd General Conference of its Condensed Matter Division.

The afternoon will be devoted to:

Welcome by the EPS President

Award of the Condensed Matter Division Europhysics Prize to Andre Geim and Kostya Novoselov

Prize Lecture
Andre Geim and Kostya Novoselov, Manchester Centre for Mesoscience & Nanotechnology, University of Manchester, U.K.
"Graphene: Magic of Carbon Flatland"

Plenary Lecture
Helmut Dosch, Max Planck Institut für Metallforschung, Stuttgart, Germany
"2011 —Odyssey in Nanospace"

Coffee Break

Plenary Lecture
Klaus von Klitzing, Nobel Laureate, MPI für Festkörperforschung, Stuttgart, Germany
"News from Quantum Hall Physics"

A brief interlude with **Congratulatory Messages** on the occasion of the 40th Anniversary of EPS

Conclusion by the European Physical Society, followed by

A **Reception** on the Terrace of the Aula Magna (as of 18:35 hrs)

Poster Prize

The Poster Prize ceremony is scheduled on Friday 29 August 2008, 12:45 - 13:15

Massimo Sancrotti Awards

The Massimo Sancrotti Awards will be distributed on Friday 29 August 2008, 12:45 - 13:15

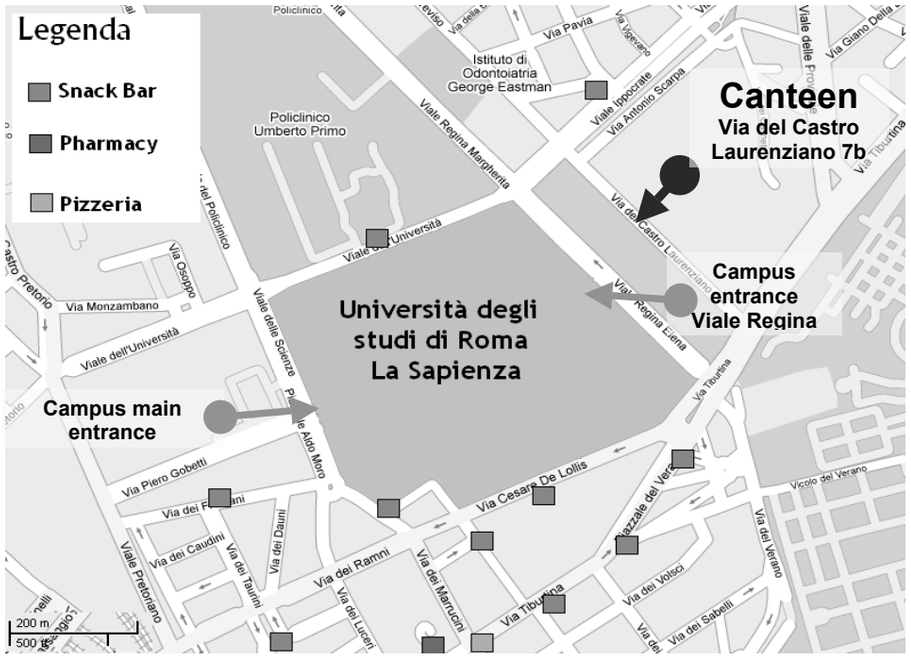
Conference Digest

The registration fee includes one technical digest in CD-format, provided pre-registration is made by the participant. Additional copies of the digest may be ordered, at a cost of Euro 25 per digest.

On-site Facilities

Wireless connection with personal laptop is available. All participants wishing to connect to the free wireless network "Sapienza" are requested to fill out a **declaration form** and present it together with a **copy of the identity document** at the registration desk, in order to receive a valid username and password for the wireless Internet connection.
A message board will be installed in the registration area.
A bank machine is available on the campus.

Lunches
Three lunches are included (from Tuesday to Thursday). Vouchers will be distributed.
The university canteen is located outside the campus (5 minutes' walk) **in Via del Castro Laurenziano 7b.**



Registration Information
The registration fees for the meeting include:
- **Admission to the technical sessions of EPS-CMD22**
- **Admission to the plenary sessions of EPS-14** held on **Wednesday afternoon, 27 August**
- **Coffee breaks** (Monday afternoon through Friday morning)
- **Three lunches** (from Tuesday through Thursday)
- **A copy of the conference programme with CD** including the one-page pdf summaries.
- **Two receptions held on Monday and Wednesday evenings**.

Conference Registration Hours:

Monday 25 August 2008	10:00 - 17:00
Tuesday 26 August 2008	08:15 - 12:30 and 14:30 - 17:00
Wednesday 27 August 2008	08:30 - 12:30 and 14:30 - 16:00
Thursday 28 August 2008	08:15 - 12:30 and 14:30 - 16:00
Friday 29 August 2008	closed

Conference Hours:

Monday 25 August 2008	14:00 - 18:30
Tuesday 26 August 2008	08:45 - 12:50 and 14:40 - 18:40
Wednesday 27 August 2008	09:00 - 12:50 and 14:40 - 18:35
Thursday 28 August 2008	08:45 - 12:50 and 14:40 - 18:40
Friday 29 August 2008	08:40 - 13:15

Coffee Breaks:

Monday 25 August 2008	16:30 - 16:50
Tuesday 26 August 2008	11:00 - 11:30
Wednesday 27 August 2008	11:00 - 11:30 and 16:20 - 17:00
Thursday 28 August 2008	11:00 - 11:30
Friday 29 August 2008	10:00 - 10:30

Short Refreshment Breaks:

Tuesday 26 August 2008	16:20 - 16:30
Thursday 28 August 2008	16:20 - 16:30

Receptions:

Monday 25 August 2008	18:30 →	Rettorato - Aula Magna Terrace
Wednesday 27 August 2008	18:35 →	Rettorato - Aula Magna Terrace

Excursion Programme
An excursion programme at **extra cost** is scheduled as follows:

Night entertainments at the Roman Houses - Tuesday 26 August 2008, 20:00 - 21:30
Cost: € 33,- including the ticket to visit the houses, an English speaking guide, an English speaking actor and an English speaking tour leader.
Transportation to the Houses needs to be arranged by the participant.
The visit will be held only with a minimum of 20 people.

Guided visit to Borghese Gallery and Museum - Friday 29 August 2008, 17:00 - 19:00
Cost: € 40,- including the ticket to visit the museum, an English speaking guide and an English speaking tour leader.
Transportation to the Gallery and Museum needs to be arranged by the participant.
The visit will be held only with a minimum of 25 people.

Guided visit to Villa Adriana and Villa D'Este, Tivoli - Saturday 30 August 2008, 09:00 - 18:00
Cost: € 85,- including the coach to Tivoli, the ticket to visit Villa Adriana and Villa d'Este, a light lunch, an English speaking guide and an English speaking tour leader.

The excursion programme is organised by the local partner:
Symposia s.r.l.
B.go San Lazzaro 17 - 00136 Roma
Tel:+39 0639725540 / Fax:+390639725541
info@grupposymposia.it

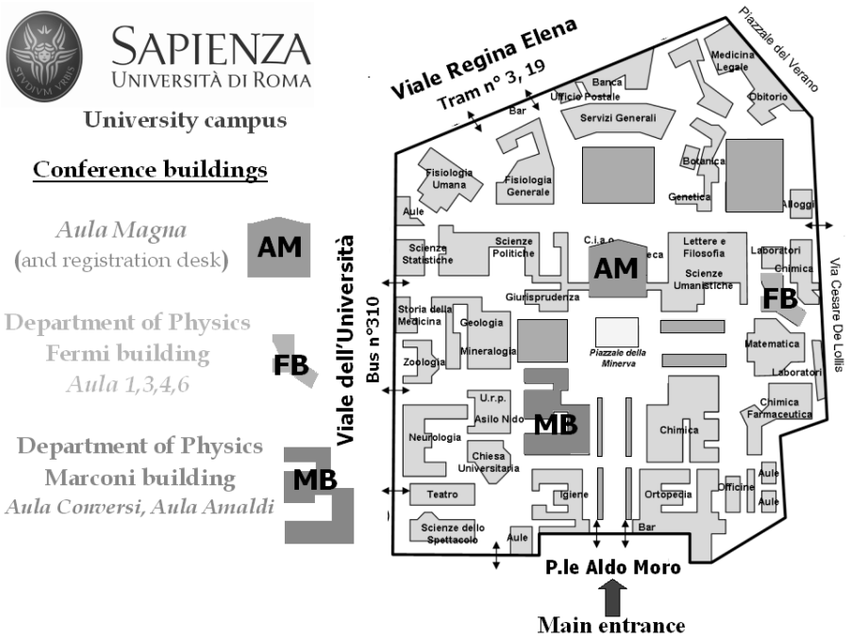
Conference Location
Sapienza Università di Roma
Piazzale Aldo Moro 2
00185 Roma
Italy
http://www.uniroma1.it/
Tel. / Fax. +39 0 6 49914277
Email: alba.perrotta@roma1.infn.it

The conference will take place in the main campus of the Sapienza Università di Roma located in a central area of Rome, within walking distance of the main railway station "Roma Termini", surrounded by the lively San Lorenzo area.

All the lecture halls are concentrated in a very small area within the campus. The main lecture hall is the **Aula Magna of the Rettorato** which contains up to 900 persons. The other lectures are located in the two buildings (**Marconi and Fermi) of the Physics Department.**

The exhibitors are located in the Rettorato.

The registration desks will be at the Rettorato main floor (up the central stairs), near to the entrance of the main lecture hall (Aula Magna).



Conference Management
The Conference management is provided by the European Physical Society, 6 rue des Frères Lumière, BP 2136,
F-68060 Mulhouse Cedex, France

Rome, Italy
Rome is a very attractive city with multiple attractions to visits. All prices given hereafter are indicative and are liable to change.

Trastevere
Separated from central Rome by the Tiber River, Trastevere is a picturesque medieval neighbourhood characterised by a Bohemian atmosphere. Its narrow cobblestone streets are lined with overhanging flower boxes and washing lines, and home to numerous cafes, boutiques, pubs and restaurants. The area has long attracted artists, famous people and experts, and is a charming place to explore, having escaped the developments of central Rome.
Transport: Bus H from the main train station, or tram 8 from Piazza Argentina

Capitol Hill
Capitol Hill was the original capitol of the ancient city and continues to serve as the seat of the city's government. The main feature of the area is Michelangelo's Piazza del Campidoglio, a testimony to the superiority of Renaissance town planning. The piazza is bordered by three palaces: the Palazzo dei Conservatori and the twin structures of the Palazzo dei Senatori and Palazzo Nuovo which house the Musei Capitolini, containing the largest collection of classical statues in the world. Among the notable statues found here are the Dying Gaul and the Satyr, the Capitoline Wolf with Romulus and Remus and the Spinario. Paths cut along the side of the hill from the Campidoglio giving way to panoramic views of the ancient sites of the Forum and Colosseum.

Address: Piazza del Campidoglio, Rome 1-00186
Website: www.museicapitolini.org/en/index_msie.htm
Telephone: Tel: 06 820 59127
Opening time: Museums open Tuesday to Sunday 9am to 7.30pm
Admission: €6.50, concessions available, Free to EU citizens under 18 and over 65.

Roman Forum (Foro Romano)
The site of ancient Rome's commercial, political and religious centre is in the valley between the Capitoline and Palatine hills. The Forum's main thoroughfare, Via Sacra, slices through the old market square and former civic centre. To make sense of the ruins and relics of the old Republic it is helpful to consult a map of the area. Some of the best preserved and most notable monuments include the impressive Arch of Septimus Severus - a construction designed to celebrate Roman victory over the Parthinians - and the former atrium of the House of the Vestal Virgins and Temple of Vesta. Also of note are the Temple of Antoninus and Faustina, and the Arch of Titus, built to celebrate Titus' destruction of Jerusalem in AD 70. To the right of the arch are stairs snaking up the Palatine hill through a series of terraces to the Farnese gardens. The scented avenue festooned with roses and orange trees gives way to a vista over the Forum.
Address: Via dei Fori Imperiali, Opening time: Daily 9am to 7.30pm, Admission: Free

The Colosseum
This enduring symbol of ancient Rome tenaciously clings to its foundations as the site of former gladiatorial conquests. Its architecture boasts an impressive array of Doric, Ionic and Corinthian columns and an underground network of cells, corridors, ramps and elevators that were used to transport animals from their cages to the arena. The magnificence of the original structure has been eroded through the years of pillaging and earthquakes so that only a skeletal framework remains.
Address: Piazza del Colosseo
Transport: B line metro to Colosseo station; bus 60, 75, 85, 87, 175, 810 or 850; electric minibus 117; tram 3 or 8
Opening time: 8.30am to 7.30pm , Admission: €9

Pantheon
The stately Pantheon is one of the world's most inspiring architectural designs. Fittingly built as a temple to the Gods by Hadrian in 120AD, its perfectly proportioned floating dome rests seductively on sturdy marble columns. The only light source flowing through the central oculus was used by the Romans to measure time (with the aid of a sundial) and the dates of equinoxes and solstices. The south transept houses the Carafa Chapel and the tomb of Fra Angelico rests under the left side of the altar.
Address: Piazza della Rotonda
Opening time: Monday to Saturday between 8.30am and 7.30pm and Sunday from 9am to 6pm, Admission: Free

The Spanish Steps and Piazza di Spagna
The graceful steps built in 1725, elegantly curve their way from the Piazza di Spagna to the Church of Santa Trinit dei Monti, a pastel tinted neoclassical building. The shopper's paradise of Via Condotti leads back from the Spanish steps to Via del Corso, and during spring the steps are decorated with pink azaleas. At the foot of the steps lies Bernini's boat-shaped Barcaccia fountain and to the right is the unassuming Keats-Shelley Memorial House.
Transport: Take Metro Linea A to the Spagna stop; bus 60 and 492 to Piazza Barberini or 117 to Piazza di Spagna.

Trevi Fountain (Fontana di Trevi)
The tiny Piazza di Trevi has been immortalised through this fountain built for Pope Clement XII. The statues adorning this watery display represent Abundance, Agrippa, Salubrity, the Virgin and Neptune guided by two tritons. Tossing a coin into the fountain is supposed to guarantee a return trip to Rome.
Transport: Take the bus to Piazza San Silvestro

St Peter's Basilica (Basilica di San Pietro)
The Basilica lies above the reputed site of St. Peter's tomb. It is an overwhelming interior containing notable sculptures including Michelangelo's Pieta, which is protected by bullet-proof glass since the damaging attack on it in 1972. In the central aisle stands Arnolfo da Cambio's bronze statue of St Peter, its foot worn down by the constant flow of pilgrims' kisses. Proudly resting above the papal altar is Bernini's Throne of St Peter. The Vatican Grottoes, containing papal tombs, can be reached by steps from the statue of St Longinus. The Necropolis is located one level below the grottoes. This is the legendary site of St Peter's tomb and advance permission has to be obtained to view it. A strict dress code is in place for the Basilica and no shorts, bare shoulders or miniskirts are allowed (for men and women).
Address: Piazza San Pietro, Website: www.stpetersbasilica.org
Transport: Metro Ottaviano or bus to Piazza del Risorgimento, Opening time: Daily between 7am and 7pm, Dome: 8am to 6pm, Necropolis: Monday to Friday 9am to 5pm
Admission: Free. Dome: €4 (€5 with lift); Necropolis: €10

The Sistine Chapel & Vatican Museums
The Sistine Chapel's famous ceiling painted by Michelangelo looms above the frescoes on the side walls that were painted by an illustrious team of artists that included Botticelli, Ghirlandaio, Roselli, Pinturicchio, Signorelli and della Gatta. The altar wall is covered by Michelangelo's Last Supper, revealing the figure of Christ hovering above centre and flanked by Mary and other saintly figures. The Vatican Museums provide an inspiring visit to one of the world's greatest collections of art. The galleries stretch over four miles (6km) and include the magnificent Raphael rooms, the Etruscan Museum and the Pio-Clementino Museum, which boasts the world's largest collection of Classical statues.
Address: Viale Vaticano, Website: www.vatican.va
Transport: Metro to Musei Vaticani or Ottaviano station; tram 19 or bus 32, 81 or 98 to Piazza del Risorgimento
Opening time: Monday to Friday 8.45am to 4.45pm, Saturday 8.45am to 1.45pm (8 March to 29 October and 27 December to 6 January); daily 8.45am to 1.45pm, last entry at 12.20pm (7 January to 6 March and 2 November to 24 December) Closed Sundays except the last Sunday of every month.
Admission: €13. Free on the last Sunday of every month.

Basilica di San Giovanni
The Basilica of St John Lateran was built in the 4th century by Constantine the Great and was the first church built in Rome. It is the cathedral of the diocese of Rome, and as such ranks above all other Roman Catholic churches, even St Peter's Basilica in the Vatican. It is the official ecclesiastical seat of the Pope, and it is here that he celebrates Mass on certain religious holidays. The building has suffered much damage in the past and has been rebuilt several times, leaving only fragmented parts of the original church. The present building is characterised by its 18th-century façade and contains several important relics, a 13th-century cloister and an ancient baptistery. Inside are numerous statues, paintings, the High Altar that can only be used by the Pope, and a cedar table that is said to be the one used by Christ at the Last Supper. Across the street is one of the holiest sites in Christendom that is visited by pilgrims from around the world: the Palace of the Holy Steps, believed to be the 28 marble steps originally at Pontius Pilate's villa in Jerusalem that Christ climbed the day he was brought before Pilate. They have been in Rome since 1589.
Address: Piazza S. Giovanni in Laterano, Transport: San Giovanni metro
Opening time: Daily 7am to 6.45pm, Admission: Free; an admission of €2 is charged to enter the cloisters

Useful links and addresses
Online accommodation **http://www.bbitalia.it/default_eng.asp?citta=Roma**
Youth hostel **http://www.hihostels.com**

Tourist information: **http://www.romaturismo.it/v2/en/main.asp**

Rome airport information: **http://www.adr.it/**
"Leonardo da Vinci" Airport in Fiumicino (FCO) information:
http://www.adr.it/content.asp?L=3&idmen=199
Ciampino Airport (CIA) information: **http://www.adr.it/content.asp?L=3&idmen=200**
Rome airport shuttle: **http://rome.airport-shuttle.com/**

Italian railway information: **http://www.trenitalia.com/en/index.html**

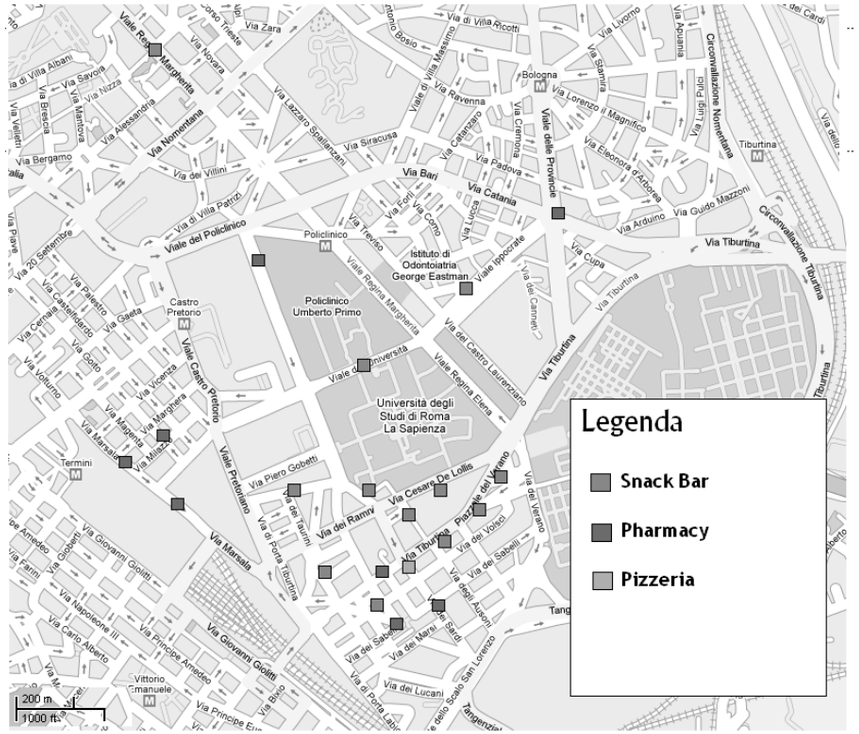
Taxi Rome information: **www.TaxiPlanet.Net**
Taxi Centro: Piazza Barberini, 1 I-00187 Roma (RM), Phone +39 06 4814447
Taxi Centro: Vicolo Del Gallinaccio, I-00187 Roma (RM), Phone +39 06 6793733
Radio Taxi companies: +39 06 6645, +39 06 4994, +39 06 3570

Local accommodation partner:
Symposia s.r.l.
B.go San Lazzaro 17 - 00136 Roma
Tel:+39 0639725540 / Fax:+390639725541
info@grupposymposia.it

Currency
Euro is the official currency in Italy.
Major credit cards (VISA, Mastercard/Eurocard, American Express, Diners…) are generally accepted in airports, train stations, hotels, larger shops etc.

Conference Language
The official language of the conference is English.

Map



Conference Chair: Lucia Sorba (Scuola Normale Superiore, Pisa and INFM-CNR, Italy)

Conference Co-chairs:
Carlo Mariani (Sapienza Università di Roma, and INFM-CNR, Italy)
and **Eoin O'Reilly** (Tyndall National Institute, Cork, Ireland)

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W. Wegscheider (University of Regensburg, Germany),
V. Pellegrini (NEST INFM-CNR & Scuola Normale Superiore, Italy)

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K. Wandelt (University of Bonn, Germany),
M. Sauvage (Synchrotron Soleil, France)
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M.R. Ibarra (University of Zaragoza, Spain)
V. Sechovsky (Charles University, The Czech Republic)
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M. Grioni (Ecole Polytechnique Fédérale, Switzerland)
P. Littlewood (Trinity College Cambridge, United Kingdom)

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S. Elliott (Trinity College Cambridge, United Kingdom)
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H. Wennerstrom (University of Lund, Sweden)
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P. Lindgard (Risø National Laboratory, Denmark)
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Materials
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Methods for Cultural Heritage and Vacuum Science
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M. Marsili (ICTP, Trieste, Italy)
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Local Scientific Secretariat:
Alba Perrotta

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Secretary: EPS

Industrial relations: L. Cinquetti

Programme at a Glance

Monday, August 25, 2008

14:00–14:15	Aula Magna	**Opening**
14:15–15:00	Aula Magna	**MONPL: Plenary 1**
15:10–16:30	Aula Magna	**MON1M: Surface, Interface and Low-Dimensional Physics - Self Assembled Organic Layer**
15:10–16:30	Aula Amaldi	**MON1A: Semiconductor Physics - Quantum Hall**
15:10–16:30	Aula Conversi	**MON1C: Joint Biological Physics & Life Sciences and Polymer Physics I**
15:10–16:30	Aula 1	**MON1F1: Materials - Carbon Nanotubes**
15:10–16:30	Aula 3	**MON1F3: Magnetism - Magnetic Nanoparticles**
15:10–16:30	Aula 4	**MON1F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity I**
15:10–16:30	Aula 6	**MON1F6: Liquids, Disordered and Off-Equilibrium Systems - Spin Glasses**
16:30–16:50		**Coffee Break**
16:50–18:30	Aula Magna	**MON2M: Surface, Interface and Low-Dimensional Physics - Organic Interfaces**
16:50–18:30	Aula Amaldi	**MON2A: Semiconductor Physics - Invited Focus Symposium: Optical and Electronic Properties of Self-Assembled Quantum Dots, Rings and Wires**
16:50–18:30	Aula Conversi	**MON2C: Joint Biological Physics & Life Sciences and Polymer Physics II**
16:50–18:30	Aula 1	**MON2F1: Materials - Stability and Dynamics of Graphene (Shared with Semiconductors Physics)**
16:50–18:30	Aula 3	**MON2F3: Magnetism - Magnetic Properties and Structures I**
16:50–18:30	Aula 4	**MON2F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity II**
16:50–18:30	Aula 6	**MON2F6: Liquids, Disordered and Off-Equilibrium Systems - Out of Equilibrium Systems**
18:30–20:00	Aula Magna Terrace	**Drink**

Tuesday, August 26, 2008

8:45– 9:30	Aula Magna	**TUEPL: Plenary 2**
9:40–11:00	Aula Magna	**TUE1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties I**
9:40–11:00	Aula Amaldi	**TUE1A: Semiconductor Physics - OD and 1D Systems**
9:40–11:00	Aula Conversi	**TUE1C: Joint Biological Physics & Life Sciences and Polymer Physics III**
9:40–11:00	Aula 1	**TUE1F1: Materials - Dynamics of Quasicrystals**
9:40–11:00	Aula 3	**TUE1F3: Magnetism - Magnetoelectronics I**
9:40–11:00	Aula 4	**TUE1F4: Superconductivity and Highly-Correlated Systems - New Materials with Strong Correlations I**
9:40–11:00	Aula 6	**TUE1F6: Liquids, Disordered and Off-Equilibrium Systems - High Frequency Dynamics in Disordered Systems**
11:00–11:30		**Coffee Break**
11:30–12:50	Aula Magna	**TUE2M: Surface, Interface and Low-Dimensional Physics - Electronic Properties II**
11:30–12:50	Aula Amaldi	**TUE2A: Semiconductor Physics - Quantum Transport**
11:30–12:50	Aula Conversi	**TUE2C: Joint Biological Physics & Life Sciences and Polymer Physics IV**
11:30–12:50	Aula 1	**TUE2F1: Materials - Multiferroics**
11:30–12:50	Aula 3	**TUE2F3: Magnetism - Magnetoelectronics II**
11:30–12:50	Aula 4	**TUE2F4: Superconductivity and Highly-Correlated Systems - New Materials with Strong Correlations II**
11:30–12:50	Aula 6	**TUE2F6: Liquids, Disordered and Off-Equilibrium Systems - Soft Matter**
12:50–14:40		**Lunch Break**
14:40–16:20	Aula Magna	**TUE3M: Surface, Interface and Low-Dimensional Physics - Organic Interfaces**
14:40–16:20	Aula Amaldi	**TUE3A: Semiconductor Physics - Graphene**
14:40–16:20	Aula Conversi	**TUE3C: Joint Biological Physics & Life Sciences and Polymer Physics V**
14:40–16:20	Aula 1	**TUE3F1: Methods for Cultural Heritage and Vacuum Science**
14:40–16:20	Aula 3	**TUE3F3: Magnetism - Magnetic Characterization Using Sinchrotron Radiation**

14:40–16:20	Aula 4	**TUE3F4: Superconductivity and Highly-Correlated Systems - New Materials with Strong Correlations III**
14:40–16:20	Aula 6	**TUE3F6: Liquids, Disordered and Off-Equilibrium Systems - Quantum Fluids**
16:20–16:30		**Short Refreshment Break**
16:30–18:40	Rettorato	**TUEp.MAG: Magnetism - Poster Session**
16:30–18:40	Physics Department	**TUEp.CUL: Poster Session - Methods for Cultural Heritage and Vacuum Science**
16:30–18:40	Physics Department	**TUEp.SEMI: Semiconductor Physics - Poster Session**
16:30–18:40	Physics Department	**TUEp.MAT: Materials - Poster Session**
16:30–18:40	Physics Department	**TUEp.SUR: Surface, Interface and Low-Dimensional Physics I - Poster Session**

Wednesday, August 27, 2008

9:00–11:00	Aula Magna	**WED1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties of Insulating and Magnetic Interfaces**
9:00–11:00	Aula Amaldi	**WED1A: Semiconductor Physics - Quantum Effects in Low-Dimensional Systems**
9:00–11:00	Aula Conversi	**WED1C: Joint Biological Physics & Life Sciences and Polymer Physics VI**
9:00–11:00	Aula 1	**WED1F1: Materials - Pairing Symmetry and Lattice Effects in Superconductors**
9:00–11:00	Aula 3	**WED1F3: Magnetism - Magnetoelectronics III**
9:00–11:00	Aula 4	**WED1F4: Superconductivity and Highly-Correlated Systems - Quantum Spin Systems and Spectroscopy I**
9:00–11:00	Aula 6	**WED1F6: Liquids, Disordered and Off-Equilibrium Systems - Supercooled Liquids and Glass Transition**
11:00–11:30		**Coffee Break**
11:30–12:50	Aula Magna	**WED2M: Surface, Interface and Low-Dimensional Physics - Adsorption and Nanopatterning**
11:30–12:50	Aula Amaldi	**WED2A: Semiconductor Physics - Quantum Cascade Lasers**
11:30–12:50	Aula Conversi	**WED2C: Joint Biological Physics & Life Sciences and Polymer Physics VII**
11:30–12:50	Aula 1	**WED2F1: Materials - Domains and Textures**
11:30–12:50	Aula 3	**WED2F3: Magnetism - Magnetic thin Films**
11:30–12:50	Aula 4	**WED2F4: Superconductivity and Highly-Correlated Systems - Quantum Spin Systems and Spectroscopy II**
11:30–12:50	Aula 6	**WED2F6: Liquids, Disordered and Off-Equilibrium Systems - Water and Hydrogen Bonded Liquids**
12:50–14:30		**Lunch Break**
14:30–16:20	Aula Magna	**EPS14.1: 14th General Conference of the European Physical Society - Part I**
16:20–17:00		**Coffee Break**
17:00–18:35	Aula Magna	**EPS14.2: 14th General Conference of the European Physical Society - Part II**
18:35–20:00	Aula Magna Terrace	**14th General Conference of the European Physical Society "Reception"**

Thursday, August 28, 2008

8:45– 9:30	Aula Magna	**THUPL: Plenary 3**
9:40–11:00	Aula Magna	**THU1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties III**
9:40–11:00	Aula Amaldi	**THU1A: Semiconductor Physics - Quantum Transport**
9:40–11:00	Aula Conversi	**THU1C: Joint Biological Physics & Life Sciences and Polymer Physics VIII**
9:40–11:00	Aula 1	**THU1F1: Materials - Carbon Nanotubes**
9:40–11:00	Aula 3	**THU1F3: Magnetism - Strongly Correlated Electron Systems**
9:40–11:00	Aula 4	**THU1F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity I**
9:40–11:00	Aula 6	**THU1F6: Physics of Socio-Economic and Complex Systems - Financial Markets**
11:00–11:30		**Coffee Break**
11:30–12:50	Aula Magna	**THU2M: Surface, Interface and Low-Dimensional Physics - Small Particle and Nanowires**
11:30–12:50	Aula Amaldi	**THU2A: Semiconductor Physics - Quantum Effects**
11:30–12:50	Aula Conversi	**THU2C: Joint Biological Physics & Life Sciences and Polymer Physics IX**
11:30–12:50	Aula 1	**THU2F1: Surface, Interface and Low-Dimensional Physics - Graphene**

11:30–12:50	Aula 3	**THU2F3: Magnetism - Magnetic Nanoparticles and Nanowires**
11:30–12:50	Aula 4	**THU2F4: Superconductivity and Highly-Correlated Systems - High Tc superconductivity II**
11:30–12:50	Aula 6	**THU2F6: Physics of Socio-Economic and Complex Systems - Socio-Economic Networks**
12:50–14:40		**Lunch Break**
14:40–16:20	Aula Magna	**THU3M: Surface, Interface and Low-Dimensional Physics - Liquid-Solid Interfaces**
14:40–16:20	Aula Amaldi	**THU3A: Semiconductor Physics - Optical Phenomena in Low-Dimensional Systems**
14:40–16:20	Aula Conversi	**THU3C: Joint Biological Physics & Life Sciences and Polymer Physics X**
14:40–16:20	Aula 1	**THU3F1: Surface, Interface and Low-Dimensional Physics (Shared with Semiconductor Physics) - Surface: Nanostructures**
14:40–16:20	Aula 3	**THU3F3: Magnetism - Magnetic Properties and Structures II**
14:40–16:20	Aula 4	**THU3F4: Superconductivity and Highly-Correlated Systems - Theoretical Methods for Many Body Computation**
14:40–16:00	Aula 6	**THU3F6: Physics of Socio-Economic and Complex Systems - Ecosystems and Other Applications**
16:20–16:30		**Short Refreshment Break**
16:30–18:40	Rettorato	**THUp.SUP: Superconductivity and Highly-Correlated Systems - Poster Session**
16:30–18:40	Physics Department	**THUp.SOC: Physics of Socio-Economic and Complex Systems - Poster Session**
16:30–18:40	Physics Department	**THUp.SUR: Surface, Interface and Low-Dimensional Physics II - Poster Session**
16:30–18:40	Physics Department	**THUp.BIO: Biological Physics & Life Sciences - Poster Session**
16:30–18:40	Physics Department	**THUp.POL: Polymer Physics - Poster Session**
16:30–18:40	Physics Department	**THUp.LIQ: Liquids, Disordered and Off-Equilibrium Systems - Poster Session**

Friday, August 29, 2008

8:40–10:00	Aula Magna	**FRI1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties and Surface Structure**
8:40–10:00	Aula Amaldi	**FRI1A: Semiconductor Physics - Quantum Optics**
8:40–10:00	Aula Conversi	**FRI1C: Joint Biological Physics & Life Sciences and Polymer Physics XI**
8:40–10:00	Aula 1	**FRI: Talks from Exhibitors**
8:40–10:00	Aula 3	**FRI1F3: Magnetism - Magneto Electronics Materials I**
8:40–10:00	Aula 4	**FRI1F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity and Quantum Criticality I**
8:40–10:00	Aula 6	**FRI1F6: Physics of Socio-Economic and Complex Systems - Self-Organization in Socio-Economic Systems**
10:00–10:30		**Coffee Break**
10:30–11:50	Aula Magna	**FRI2M: Surface, Interface and Low-Dimensional Physics - Electronic Properties IV**
10:30–11:50	Aula Amaldi	**FRI2A: Semiconductor Physics - Low Dimensional Systems**
10:30–11:50	Aula Conversi	**FRI2C: Joint Biological Physics & Life Sciences and Polymer Physics XII**
10:30–11:50	Aula 1	**FRI1F: Surface, Interface and Low-Dimensional Physics - Nanowires, Nanoparticles**
10:30–11:50	Aula 3	**FRI2F3: Magnetism - Magneto Electronics Materials II**
10:30–11:50	Aula 4	**FRI2F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity and Quantum Criticality II**
10:30–11:50	Aula 6	**FRI2F6: Physics of Socio-Economic and Complex Systems - Dynamics of Socio-Economic Systems**
12:00–12:45	Aula Magna	**FRIPL: Plenary 4**
12:45–13:15	Aula Magna	**Prize + Closing**

Plenary and Invited Talks at a Glance

Monday, August 25, 2008

14:15	Aula Magna	**MONPL.1: Rafal Dunin-Borkowski**, M. Pósfai, T. Kasama — *Magnetic Microstructure of Closely-Spaced Ferrimagnetic Crystals in Magnetotactic Bacteria*
15:10	Aula Magna	**MON1M.1: Trolle R. Linderoth** — *Molecular Organisation on Surfaces Studied by UHV-STM: Reactions, Chirality and Dynamics*
15:10	Aula Amaldi	**MON1A.1: Aron Pinczuk** — *Quantum Hall Fluids: New Insights from Optics*
15:10	Aula Conversi	**MON1C.1:** Simone Peter, Hendrik Meyer, **Jörg Baschnagel** — *Slow Dynamics and Glass Transition in Simulated Polymer Films*
15:10	Aula 1	**MON1F1.1: Thomas Pichler** — *Unraveling the electronic structure of functionalized single wall carbon nanotubes*
15:10	Aula 3	**MON1F3.1: Gerardo Goya**, Ivan Marcos-Campos, Laura Asín, Teobaldo Torres, Fanny de la Iglesia, Valeria Grazú, Maria Moros, Nicolás Cassinelli, Javier Godino, Ariel Silber, Alejandro Tres, M. Ricardo Ibarra — *Magnetic Hyperthermia for Biomedical Applications*
15:10	Aula 4	**MON1F4.1: Ming Shi**, Joel Mesot — *Electronic and Magnetic Excitations of High-Temperature Cuprate Superconductors Probed by ARPES and Neutron Scattering*
15:10	Aula 6	**MON1F6.1: Silvio Franz** — *Interfaces in Hierarchical and Finite Dimensional Spin Glasses.*
16:50	Aula Conversi	**MON2C.1: Anna Niedzwiecka** — *Molecular Recognition of the mRNA 5'- and 3'-end Structures by Proteins*
16:50	Aula 1	**MON2F1.1: Mikhail Katsnelson** — *Graphene: A new bridge between condensed matter physics and quantum electrodynamics*
16:50	Aula 6	**MON2F6.1: Jorge Kurchan**, Romain Mari, Florent Krzakala — *Jamming versus Glass Transitions*

Tuesday, August 26, 2008

8:45	Aula Magna	**TUEPL.1: Albert Fert** — *Spintronics: Fundamentals and Recent Developments*
9:40	Aula Magna	**TUE1M.1: Daniel Malterre**, Yannick Fagot-Revurat, Bertrand Kierren, Clément Didiot — *Surface state in self-organized nanostructurated surfaces*
9:40	Aula Conversi	**TUE1C.1: Tuomas Knowles**, Mark Welland, Christopher Dobson — *Physical aspects in protein aggregation*
9:40	Aula 1	**TUE1F1.1: Marek Mihalkovic**, Marc de Boissieu — *Vibrational Properties of Icosahedral Quasicrystal in Mg–Sc–Zn Alloy*
9:40	Aula 3	**TUE1F3.1: Paulo Freitas** — *Magnetic tunnel junctions*
9:40	Aula 4	**TUE1F4.1: Erio Tosatti**, Massimo Capone, Michele Fabrizio, Claudio Castellani — *Strongly correlated superconductivity and Mott transition of expanded A_3C_{60} alkali fullerides*
9:40	Aula 6	**TUE1F6.1: Francesco Sette** — *Science and Challenges at the European Synchrotron Radiation Facility*
11:30	Aula Conversi	**TUE2C.1: Roland G. Winkler** — *Mesoscale simulations of polymers in external fields*
11:30	Aula 1	**TUE2F1.1: James F. Scott** — *New Results on Magnetoelectric Multiferroics*
11:30	Aula 3	**TUE2F3.1: Mathias Kläui** — *Current-induced Domain Wall Dynamics*
14:40	Aula Magna	**TUE3M.1: Stefano Fabris** — *Understanding the Structure and Function of Self-Assembled Organometallic Nanomaterials by Computer Modeling*
14:40	Aula Conversi	**TUE3C.1: Simon Scheuring** — *Structure and assembly of membrane proteins in native membranes by atomic force microscopy (AFM)*
14:40	Aula 1	**TUE3F1.1:** Mark Dowsett, **Annemie Adriaens** — *The use of Infrastructural Facilities for Cultural Heritage Research*
14:40	Aula 3	**TUE3F3.1: Tolek Tyliszczak**, Yves Acremann, Bartel Van Waeyenberge, Hermann Stoll — *Characterization of magnetization dynamics by scanning transmission x-ray microscope*
14:40	Aula 6	**TUE3F6.1: Riccardo Zecchina** — *Statistical Mechanics of Steiner Trees*
15:20	Aula 1	**TUE3F1.2: Pierro Baglioni** — *Nanoscience for the Conservation of Cultural Heritage*

Wednesday, August 27, 2008

9:00	Aula Magna	**WED1M.1: Jose Ignacio Pascual**, Isabel Fernandez-Torrente, Katharina Franke — *Scanning tunneling spectroscopy of molecular donor-acceptor assemblies*
9:00	Aula Amaldi	**WED1A.1: Massimo Rontani** — *An Electron Molecule in a Quantum Dot: Theory and Inelastic Light Scattering Experiments*
9:00	Aula Conversi	**WED1C.1: Ludwik Leibler** — *Supramolecular plastics and self-healing rubbers*
9:00	Aula 1	**WED1F1.1: K. Alex Müller** — *Early signatures of s and d symmetries in high temperature superconducting copper oxides*
9:00	Aula 3	**WED1F3.1: Andreas Wieck** — *Ferromagnetic GaN by rare earth implantation*
9:00	Aula 4	**WED1F4.1: Henrik Ronnow** — *Neutron Experiments in Quantum Spin Systems*
9:00	Aula 6	**WED1F6.1: Jeppe C. Dyre**, Ulf R. Pedersen, Nicholas Bailey, Thomas B. Schrøder — *"Strong pressure-energy correlations in the thermal equilibrium fluctuations of model liquids: Cause and consequences"*
9:40	Aula Conversi	**WED1C.2: Gerd Ulrich Nienhaus**, Karin Nienhaus — *Protein-Ligand Interactions in Heme Proteins*
11:30	Aula Amaldi	**WED2A.1: Carlo Sirtori**, Sukhdeep Dhillon, Stefano Barbieri — *THz transfer on an optical carrier*

11:30	Aula Conversi	**WED2C.1:** Kathleen Wood, Douglas Tobias, Giuseppe Zaccai, **Martin Weik** — *The coupling between hydration-water and protein dynamics*
11:30	Aula 1	**WED2F1.1:** Ferenc Csikor, Christian Motz, Daniel Weygand, Michael Zaiser, **Stefano Zapperi** — *Dislocation avalanches, strain bursts, and the problem of plastic forming at the micron scale*
14:50	Aula Magna	**EPS14.1.1: Andre Geim**, Kostya Novoselov — *Graphene: Magic of Carbon Flatland*
15:35	Aula Magna	**EPS14.1.2: Helmut Dosch** — *2011 - Odyssey in Nanospace*
17:00	Aula Magna	**EPS14.2.1: Klaus von Klitzing** — *News from Quantum Hall Physics*

Thursday, August 28, 2008

8:45	Aula Magna	**THUPL.1: Antoine Georges** — *Condensed matter physics with light and atoms: ultra-cold fermions in optical lattices.*
9:40	Aula Magna	**THU1M.1: Erminald Bertel**, Alexander Menzel, Enrico Doná — *One-Dimensional Physics on Surfaces: Charge Density Waves, Fluctuations, and Phase Transitions*
9:40	Aula Amaldi	**THU1A.1: Thomas Ihn**, Simon Gustavsson, Thomas Müller, Stephan Schnez, Johannes Güttinger, Francoise Molitor, Christoph Stampfer, Klaus Ensslin — *Electronic transport in quantum dots: from GaAs to graphene*
9:40	Aula Conversi	**THU1C.1: Thomas Russell** — *Directed Self-Oriented Self-Assembly of Block Copolymers: Bottom-Up Meeting Top-Down*
9:40	Aula 4	**THU1F4.1: Olle Gunnarsson**, Oliver Rösch, Giorgio Sangiovanni, Erik Koch, Claudio Castellani, Massimo Capone — *Interplay between electron-phonon and Coulomb*
9:40	Aula 6	**THU1F6.1: Stefano Ciliberti** — *The stock option market as a tool to measure investor's risk*
11:30	Aula Conversi	**THU2C.1: Dimitris Vlassopoulos**, Michael Kapnistos, Michael Lang, Wim Pyckhout-Hintzen, Dieter Richter, Donghyun Cho, Taihyun Chang, Jacques Roovers, Michael Rubinstein — *Dynamics of cyclic polymers*
11:30	Aula 6	**THU2F6.1: Joerg Reichardt** — *Block-Structure and Function in Networks*
14:40	Aula Magna	**THU3M.1: Elias Vlieg**, Wim Noorduin, Hugo Meekes, Willem van Enckevort, Toshiko Izumi, Donna Blackmond, Alessia Millemaggi, Bernard Kaptein, Michel Leeman, Richard Kellogg — *Chiral purification using Ostwald ripening*
14:40	Aula Conversi	**THU3C.1: Juan Colmenero** — *Dynamics of Asymmetric Polymer Blends*
14:40	Aula 6	**THU3F6.1: Irene Giardina** — *Three-dimensional reconstruction of starling flocks: an empirical investigation of collective animal behaviour.*

Friday, August 29, 2008

8:40	Aula Magna	**FRI1M.1: Werner A. Hofer** — *Dynamic Processes Observed by Scanning Tunnelling Microscopes: Conformation Changes, Diffusion and Vibrations*
8:40	Aula Amaldi	**FRI1A.1: Andrew Shields** — *Nano-photonic devices for quantum information technology*
8:40	Aula Conversi	**FRI1C.1: Gert Strobl** — *Laws Controlling Crystallization and Melting in Bulk Polymers*
8:40	Aula 3	**FRI1F3.1: Antoine Maignan**, Natalia Bellido, Bohdan Kundys, Christine Martin, Charles Simon — *Coupling between magnetic and dielectric properties in insulating transiton metal oxides.*
8:40	Aula 4	**FRI1F4.1: Giacomo Ghiringhelli** — *Magnetic excitations measured by high resolution L_3 edge RIXS in cuprates and in NiO*
8:40	Aula 6	**FRI1F6.1: Janos Kertesz**, Et Al. — *Social networks and their modeling*
10:30	Aula Conversi	**FRI2C.1: Michael Pusch** — *Biophysical mechanisms of CLC chloride channels and transporters*
10:30	Aula 6	**FRI2F6.1: Andrea Baronchelli** — *Statistical physics approach to language games*
12:00	Aula Magna	**FRIPL.1: Annabella Selloni** — *Organic molecules on surfaces: insights from first principles simulations*

Aula Magna

14:00 – 14:15: Opening

14:15 – 15:00

MONPL: Plenary 1

Chair: Lucia Sorba, Scuola Normale Superiore, Pisa, Italy

MONPL.1 (Plenary) 14:15

Magnetic Microstructure of Closely-Spaced Ferrimagnetic Crystals in Magnetotactic Bacteria — •Rafal Dunin-Borkowski[1], M. Pósfai[2], and T. Kasama[3] — [1]Center for Electron Nanoscopy, Technical University of Denmark, DK-2800 Kongens Lyngby, Denmark — [2]Department of Earth and Environmental Sciences, University of Veszprém, Veszprém POB 158, H8200 Hungary — [3]Department of Materials Science and Metallurgy, University of Cambridge, Pembroke Street, Cambridge CB2 3QZ, United Kingdom

Off-axis electron holography in the transmission electron microscope is used to image the magnetic remanent states and magnetization reversal mechanisms, and to measure the magnetic moments, of arrangements of ferrimagnetic nanocrystals synthesized by magnetotactic bacteria.

15:10 – 16:30

MON1M: Surface, Interface and Low-Dimensional Physics - Self Assembled Organic Layer

Chair: J.I. Pascual, Freie Universität Berlin, Berlin, Germany

MON1M.1 (Invited) 15:10

Molecular Organisation on Surfaces Studied by UHV-STM: Reactions, Chirality and Dynamics — •Trolle R. Linderoth — Interdisciplinary Nanoscience Center (iNANO) and Department of Physics and Astronomy, University of Aarhus

Molecular surface structures stabilised by comparatively strong covalent intermolecular bonds are synthesised in Ultra High Vacuum and characterised by Scanning Tunneling Microscopy. Chiral adsorption structures and a novel, dynamic chiral switching mechanism is furthermore described.

Aula Amaldi

15:10 – 16:30

MON1A: Semiconductor Physics - Quantum Hall

Chair: J.C. Maan, University of Nijmegen, Nijmegen, The Netherlands

MON1A.1 (Invited) 15:10

Quantum Hall Fluids: New Insights from Optics — •Aron Pinczuk — Columbia University, Dept. of Appl. Physics & Appl. Mathematics and Dept. of Physics, New York, NY, USA

Quantum Hall liquids support low-energy excitation modes that manifest emergent physics due to fundamental interactions. Inelastic light scattering experiments at very low temperatures access these modes to explore novel physics in reduced dimensionality.

Aula Conversi

15:10 – 16:30

MON1C: Joint Biological Physics & Life Sciences and Polymer Physics I

Chair: G. Strobl, Freiburg Universität , Freiburg, Germany

MON1C.1 (Invited) 15:10

Slow Dynamics and Glass Transition in Simulated Polymer Films — Simone Peter, Hendrik Meyer, and •Jörg Baschnagel — Institut Charles Sadron, Strasbourg, France

By computer simulations we explore the depression of the glass transition temperature for freely standing and supported polymer films. This depression results from a smooth gradient of enhanced dynamics, induced by the interfaces.

Aula 1

15:10 – 16:30

MON1F1: Materials - Carbon Nanotubes

Chair: H. Kuzmany, University of Wien, Wien, Austria

MON1F1.1 (Invited) 15:10

Unraveling the electronic structure of functionalized single wall carbon nanotubes — •Thomas Pichler — Faculty of Physics, University of Vienna, Strudlhofg. 4, 01090 Vienna, austria

Examples of the electronic properties of functionalized SWCNT using high energy spectroscopy as a probe will be presented, emphasizing the influence of basic correlation effects, local field corrections on their (metallic) ground state.

Aula 3

15:10 – 16:30

MON1F3: Magnetism - Magnetic Nanoparticles

Chair: T. Tyliszczak, Ernest Orlando Lawrence Berkeley National Laboratory, USA

MON1F3.1 (Invited) 15:10

Magnetic Hyperthermia for Biomedical Applications — •Gerardo Goya[1], Ivan Marcos-Campos[2], Laura Asín[1], Teobaldo Torres[1], Fanny de la Iglesia[1], Valeria Grazú[1], Maria Moros[1], Nicolás Cassinelli[1], Javier Godino[2], Ariel Silber[3], Alejandro Tres[2], and M. Ricardo Ibarra[1] — [1]Nanoscience Institute of Aragon (INA), University of Zaragoza, Pedro Cerbuna 12, 50009-Zaragoza, Spain. — [2]Hospital Clinico Universitario 'Lozano Blesa', San Juan Bosco 15, Zaragoza, Spain. — [3]Instituto de Ciências Biomédicas, Universidade de São Paulo. São Paulo, Brazil.

Magnetic hyperthermia (MHT) experiments were done to evaluate possible therapies on unicellular organisms. We studied the final location of the particles; the toxicity effects, and the effectiveness of MHT to induce cell death.

Aula 4

15:10 – 16:30

MON1F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity I

Chair: E. Tosatti, SISSA, Trieste, Italy

MON1F4.1 (Invited) 15:10

Electronic and Magnetic Excitations of High-Temperature Cuprate Superconductors Probed by ARPES and Neutron Scattering — •Ming Shi[2] and Joel Mesot[1] — [1]Paul Scherrer Institute, Villigen, Switzerland — [2]Swiss Light Source, Paul Scherrer Institute, Switzerland

Recent results obtained on LSCO will be presented. Issues such as the shape of the superconducting order parameter and its doping dependence, coherent vs incoherent excitations and anisotropic scattering will be discussed.

Aula 6

15:10 – 16:30

MON1F6: Liquids, Disordered and Off-Equilibrium Systems - Spin Glasses

Chair: R. Zecchina, Politecnico di Torino, Turin, Italy

MON1F6.1 (Invited) 15:10

Interfaces in Hierarchical and Finite Dimensional Spin Glasses. — •Silvio Franz — LPTMS Université Paris-Sud 11, Paris, France

I will describe a new method to study the stability of the spin glass phase against fluctuation of the order parameter. I will present analytical and numerical results for hyerarchical spin glasses and the three dimensional model.

Aula Magna

MON1M.2 15:50

Nano-patterns formed by unfolded proteins and polyelectrolytes on pyrolytic graphite — Ornella Cavalleri, Tiziana Svaldo-Lanero, Amanda Penco, Mirko Prato, Maurizio Canepa, and •Ranieri Rolandi — Physiscs Department, University of Genoa, Genoa, Italy

Molecular layers patterned at the nanoscale, extending over the microscopic scale, have been obtained upon adsorption of commonly available proteins and polyelectrolytes onto the hydrophobic and long-range ordered surface of pyrolytic graphite (HOPG).

MON1M.3 16:10

Highly Organized Semifluorinated Alkane Monolayer — •Philippe Fontaine[1], Lisa Bardin[1,2], Marie-Claude Fauré[2], Michel Goldmann[2], Marie-Pierre Krafft[3], and Eduardo Filipe[4] — [1]Synchrotron SOLEIL, Saint Aubin, France — [2]Institut des NanoSciences de Paris, Paris, France — [3]Institut Charles Sadron, Strasbourg, France — [4]Insituto Superior Technico, Lisboa, Portugal

Using Grazing Incidence Small Angle X-ray Scattering, we demonstrate that Langmuir monolayers on the water surface of Semifluorinated alkanes (CnF2n+1CmH2m+1) exhibits an hexagonal network of nano-domains with a large parameter (30nm).

16:30 – 16:50: Coffee Break

Aula Amaldi

MON1A.2 15:50

Quantum Hall effect in random GaAs/AlGaAs superlattices — •Yury Pusep[1], Alberto Rodriguez[2,3], Aroldo Arakaki[1], and Carlos de Souza[1] — [1]Instituto de Fisica de São Carlos, Universidade de São Paulo, 13460-970 São Carlos, SP, Brazil. — [2]Centre for Scientific Computing, University of Warwick, Coventry, CV4, 7AL, UK. — [3]Departamento de Fisica Fundamental, Universidad de Salamanca, 37008, Salamanca, Spain.

Stability of the quantized Hall phases is studied in weakly coupled GaAs/AlGaAs multilayers as a function of the interlayer correlations controlled by the interlayer tunneling and by the random variation of the well thicknesses.

MON1A.3 16:10

Quantum phase transition to a composite-fermion phase in electron bilayers at total filling factor \nu_T = 1. — •Biswajit Karmakar[1], Vittorio Pellegrini[1], Aron Pinczuk[2,3], Brian S. Dennis[3], Loren N. Pfeiffer[3], and Ken W. West[3] — [1]NEST CNR-INFM and Scuola Normale Superiore, I-56126, Pisa, Italy — [2]Dept. of Appl. Phys. And Appl. Math., Dept. of Phys., Columbia University, New Work 10027 — [3]Bell Laboratories, Alcatel-Lucent, Murray Hill, New Jersey 07974

We show that a first-order quantum phase transition separates an excitonic phase from a composite-fermion metal in electron bilayers at \nu_T=1. The evidence is based on measurements of low-lying collective modes by inelastic light scattering.

16:30 – 16:50: Coffee Break

Aula Conversi

MON1C.2 15:50

Crossover from glassy to polymer dynamics - New perspectives from field cycling NMR — •Ernst Rössler — Experimentalphysik II, Universitaet Bayreuth, 95440 Bayreuth, Germany

We apply field cycling NMR to investigate the crossover from glassy through Rouse to reptation dynamics in polymers with broad range of molecular weights. The segmental correlation function is probed over six decades in amplitude.

MON1C.3 16:10

Small-molecule diffusion in semicrystalline polymers — •Ulf Gedde, Mikael Hedenqvist, Alessandro Mattozzi, and Bereket Neway — Fibre and Polymer Technology, School of Chemical Science and Engineering, Royal Institute of Technology, SE-100 44 Stockholm, Sweden

Diffusion of n-hexane in poly(ethylene-co-1-hexene)s with different comonomer contents and crystallinities has been studied by desorption experiments, X-ray scattering, NMR and Raman spectroscopy, molecular dynamics simulation, and random-walk simulations based on computer-built spherulitic structures.

16:30 – 16:50: Coffee Break

Aula 1

MON1F1.2 15:50

In-situ Raman spectroelectrochemistry: a method of choice to study carbon nanostructures — •Martin Kalbac[1,2], Ladislav Kavan[1], and Lothar Dunsch[2] — [1]J. Heyrovský Institute of Physical Chemistry, Academy of Sciences of the Czech Republic, Dolejškova 3, CZ-182 23 Prague 8, Czech Republic — [2]Leibniz Institute of Solid State and Materials Research, Helmholtzstr. 20, D - 01069 Dresden, Germany

A detail analysis of the behavior of SWCNTs during electrochemical doping is presented. Special attention has been paid to the development of the Raman tangential mode.

MON1F1.3 16:10

An equimolar C2H2-CO2 reaction in the synthesis of Carbon Nanotubes — •Arnaud Magrez[1], Jin Won Seo[1,2], Barbara Korbély[1,3], Marijana Mionic[1], and Laszlo Forro[1] — [1]IPMC, EPF Lausanne, Switzerland — [2]MTM, Katholieke Universiteit Leuven, Belgium — [3]University of Szeged, Hungary

We will show that mixing C2H2 and CO2 in an equimolar proportion (C2H2/CO2=1) provides outstanding kinetics of the carbon nanotubes synthesis reaction below 500°C on numerous functional materials without any demanding catalyst pre-activation step.

16:30 – 16:50: Coffee Break

Aula 3

MON1F3.2 15:50

Spin-glass like freezing and enhanced magnetization in ultra-small CoFe2O4 nanoparticles — •Davide Peddis and Dino Fiorani — Istituto di Struttura della Materia - CNR. C.P. 10, 00016 Monterotondo Stazione (Roma), Italy

The results presented in this communication provide evidence of a magnetic transition to a frozen spin-glass like state at low temperature (below 30 K) accompanied by enhanced saturation magnetization and increase of magnetic anisotropy.

MON1F3.3 16:10

Magnetic microstructure of magnetite doped elastomers investigated by SANS and SAXS — •Maria Balasoiu[1,2], Mihail-Liviu Craus[1,3], Vasyl Haramus[4], Josef Plestil[5], Alexander Kuklin[1], Raul Erhan[1], Eugen Mircea Anitas[1], Andreas Schreyer[4], Mihai Lozovan[3], Vasile Tripadus[2], and Ioan Bica[6] — [1]Joint Institute of Nuclear Research, Dubna, Russia — [2]National Institute of Physics and Nuclear Engineering, Bucharest, Romania — [3]National Institute of Research and Development for Technical Physics, Iasi, Romania — [4]GKSS Forschungszentrum, Geesthacht, Germany — [5]Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague — [6]The West University of Timisoara, Department of Electricity and Magnetism, Timisoara, Romania

Stomaflex elastomer filled with nanoscale magnetite particles have been investigated by Small-Angle Neutron Scattering (SANS) and Small-Angle X-ray Scattering (SAXS). Average size of the particles and the strain was determines by XRD.

16:30 – 16:50: Coffee Break

Aula 4

MON1F4.2 15:50

Collective modes of inhomogeneous states in cuprates — •José Lorenzana[1] and Goetz Seibold[2] — [1]SMC-INFM, ISC-CNR, Dip. di Fisica Università degli Studi di Roma "La Sapienza", P. Aldo Moro 2, 00185 Roma, Italy — [2]Institut für Physik, BTU Cottbus, PBox 101344,03013 Cottbus, Germany

We will show computations of collective modes of inhomogeneous cuprates that explain the evolution of several spectroscopies (neutron, optical) with doping. We will discuss the relevance of these results for the normal and superconducting properties.

MON1F4.3 16:10

Two Energy Scales in Strongly-Correlated Superconductors — •Massimo Capone — SMC CNR-INFM and University of Rome "La Sapienza", P.le A. Moro 2, I-00185, Rome, Italy and ISC-CNR, Via dei Taurini 19, I-00185, Rome, Italy

We show the general existence of two energy scales (gaps) in the superconducting phase of strongly correlated systems. The large scale remains finite even in the insulating state, while the small one vanishes at half-filling.

16:30 – 16:50: Coffee Break

Aula 6

MON1F6.2 15:50

Aging dynamics of Ising Spin Glasses in three dimensions — Francesco Belletti[1], Maria Cotallo[2,3], Andres Cruz[2,3], Luis Antonio Fernandez[3,5], Antonio Gordillo[7], Marco Guidetti[1], •Andrea Maiorano[1,3], Filippo Mantovani[1], Enzo Marinari[4], Victor Martin-Mayor[3,5], Antonio Muñoz-Sudupe[5], Denis Navarro[6], Giorgio Parisi[4], Sergio Perez-Gaviro[2,3], Juan Jesus Ruiz-Lorenzo[3,7], Sebastiano Fabio Schifano[1], Daniele Sciretti[2,3], Alfonso Tarancon[2,3], Raffaele Tripiccione[1], Jose Luis Velasco[2,3], and David Yllanes[5] — [1]Dipartimento di Fisica, Università di Ferrara, 44100 Ferrara (Italy) — [2]Departamento de Física Teórica, Universidad de Zaragoza, 50009 Zaragoza (Spain) — [3]Instituto de Biocomputación y Física de Sistemas Complejos (BIFI), 50009 Zaragoza (Spain) — [4]Dipartimento di Fisica, Università di Roma "La Sapienza", 00185 Roma (Italy) — [5]Departamento de Física Teórica I, Universidad Complutense, 28040 Madrid (Spain) — [6]Instituto de Investigación en Ingenieria de Aragón (I3A), Universidad de Zaragoza, 50018 Zaragoza (Spain) — [7]Departamento de Física, Universidad de Extremadura, 06071 Badajoz (Spain)

The aging behavior of the three-dimensional $\pm J$ Edwards-Anderson model is investigated numerically. The time scales of our simulation on the Janus supercomputer correspond to order $10^{-1}s$ of an experiment on a real sample.

MON1F6.3 16:10

Diluted 1-d spin glasses with power law decaying interactions — •Luca Leuzzi[1], Giorgio Parisi[1,2], Federico Ricci-Tersenghi[2], and Juan-José Ruiz-Lorenzo[3] — [1]SMC-INFM-CNR, Rome, Italy — [2]Dipartimento di Fisica, Università "Sapienza", Rome, Italy — [3]Departamento de Fisica, Univ. Extremadura, Badajoz,* Spain.

We study a diluted 1-d spin glass model with algebraic decaying interactions finding static and dynamic evidence for the replica symmetry breaking theory out of the mean-field approximation. The effect of applying a magnetic field is presented.

16:30 – 16:50: Coffee Break

Aula Magna

16:50 – 18:30

MON2M: Surface, Interface and Low-Dimensional Physics - Organic Interfaces

Chair: P. Fontaine, Synchrotron SOLEIL, Saint Aubin, France

MON2M.1 16:50

Long-range order and interaction of the Pentacene/Cu119 interface studied by Scanning Tunneling Microscopy (STM) and X-ray spectroscopy — •Mirco Chiodi[1,2], Albano Cossaro[2], Luca Floreano[2], Alberto Morgante[2], and Luca Gavioli[1,2] — [1]Dipartimento di Matematica e Fisica, Università Cattolica del Sacro Cuore, via dei Musei 41, IT-25121 Brescia, Italy — [2]Laboratorio Nazionale TASC CNR-INFM, Basovizza SS-14, Km 163.5, IT-34012 Trieste, Italy

Core-level and STM data on pentacene/Cu(119) surface show that substrate-induced long-range order substantially decreases above the first layer, as the molecule-metal interaction weakens. Changes of core-level lineshape and morphology for the annealed multilayer are discussed.

MON2M.2 17:10

First principles study of aromatic molecules on Copper substrates — •Andrea Ferretti[1,2], Arrigo Calzolari[2], Rosa Di Felice[2], Alice Ruini[1,2], and Elisa Molinari[1,2] — [1]Dipartimento di Fisica, Università di Modena e Reggio E., via Campi 213/A, IT-41100 Modena, Italy — [2]INFM-CNR-S3, Natl. Center on nanoStructures and bioSystems at Surfaces, via Campi 213/A, IT-41100 Modena, Italy

By combining experimental and theoretical approaches, we study the adsorption of pentacene on copper to investigate the coupling between aromatic molecules and metal surfaces. Our results demonstrate electronic mixing between molecular orbitals and metal states.

MON2M.3 17:30

Alkali metal-doped copper-phthalocyanine: from single layer to thin film — •Antonio Calabrese[1], Flavia Crispoldi[2], Luca Floreano[3], Alberto Verdini[3], Carlo Mariani[1], and Maria Grazia Betti[1] — [1]Dipartimento di Fisica, Università di Roma La Sapienza, Piazzale Aldo Moro 2, I-00185 Roma, Italy — [2]Dipartimento di Fisica and CNR-INFM, Università di Modena e Reggio Emilia, Via G. Campi 213/A, I-41100 Modena, Italy — [3]Laboratorio

Aula Amaldi

16:50 – 18:30

MON2A: Semiconductor Physics - Invited Focus Symposium: Optical and Electronic Properties of Self-Assembled Quantum Dots, Rings and Wires

Chair: J. T. Devreese, Universiteit Antwerpen, Belgium

MON2A.1 16:50

Controlled Variation of Excitonic Fine Structure Splitting in Single Quantum Dots for Future Single Q-bit and Entangled Photon Emitters — •Dieter Bimberg — Institut für Festkörperphysik, Technische Universität Berlin, Hardenbergstraße 36, 10623 Berlin, Germany

The excitonic fine-structure splitting in single InAs/GaAs quantum dots (QDs) is investigated both experimentally and theoretically. It can be tuned by QD size and ex-situ annealing. An electrically driven single-photon emitter is demonstrated.

MON2A.2 17:10

Optical and Electronic Properties of Self-Assembled Nanowires — •Lars Samuelson — Lund University, Solid State Physics, Box 118, SE-221 00 Lund, Sweden

Nanowires are formed via a self-assembling method, by which ideal 10nm-scale devices may be formed. In this talk is summarized the status of growth, optical and electronic properties and applications of III-V nanowires.

MON2A.3 17:30

Impurities in Self-Assembled Free-Standing Semiconductor Nanowires — •Bart Partoens, Bin Li, Hartwin Peelaers, An Slachmuylders, Wim Magnus, and Francois Peeters — Department of Physics, University of Antwerp, Belgium

We performed ab initio and effective mass calculations to study the localization of dopants and the shallow impurity states in free-standing semiconductor nanowires. Also the phonons are studied to determine the stability of these wires.

Aula Conversi

16:50 – 18:30

MON2C: Joint Biological Physics & Life Sciences and Polymer Physics II

Chair: C. Cecconi, S3 INFM-CNR, Modena, Italy

MON2C.1 (Invited) 16:50

Molecular Recognition of the mRNA 5'- and 3'-end Structures by Proteins — •Anna Niedzwiecka — Biological Physics Group, Institute of Physics, Polish Academy of Sciences, 02-668 Warszawa, Poland — Division of Biophysics, Institute of Experimental Physics, University of Warsaw, 02-089 Warszawa, Poland

Communication between the mRNA terminal 5'-cap and 3'-poly(A) tail is crucial for efficient mRNA metabolism. Determinants of the cap binding by the eukaryotic initiation factor 4E and poly(A)-specific exoribonuclease have been analyzed by biophysical methods.

MON2C.2 17:30

Crystal structures and kinetic characterization of archaeal Protoglobin: novel ligand diffusion paths to the heme — Marco Nardini[1], Alessandra Pesce[2], Liesbet Thijs[3], Jennifer A. Saito[4], Sylvia Dewilde[3], Maqsudul Alam[4], Paolo Ascenzi[5], Massimiliano Coletta[6], Chiara Ciaccio[6], Luc Moens[3], and •Martino Bolognesi[1] — [1]Department of Biomolecular Sciences and Biotechnology, CNR-INFM, University of Milano, Via Celoria 26, 20133-Milano, Italy — [2]Department of Physics, CNR-INFM and CEBR, University of Genova, Via Dodecaneso, 33, 16146-Genova, Italy — [3]Department of Biomedical Sciences, University of Antwerp, Universiteitsplein 1, B-2610 Antwerp, Belgium — [4]Department of Microbiology, Snyder

Aula 1

16:50 – 18:30

MON2F1: Materials - Stability and Dynamics of Graphene (Shared with Semiconductors Physics)

Chair: A. Fasolino, Institute of Theoretical Physics Toernooiveld, Njimegen, The Netherlands

MON2F1.1 (Invited) 16:50

Graphene: A new bridge between condensed matter physics and quantum electrodynamics — •Mikhail Katsnelson — Institute for Molecules and Materials, Radboud University Nijmegen, 6525 AJ, Nijmegen, The Netherlands

A review of "quantum relativistic" dynamics of charge carriers in single- and bilayer graphene is done, with a special emphasize of the effects of corrugations of graphene sheets.

MON2F1.2 17:30

Surface quantum Hall state and spin accumulation in graphene in a zero magnetic field — •Grigory Tkachov and Martina Hentschel — Max Planck Institute for the Physics of Complex Systems, Noethnitzer St. 38,D-01187 Dresden, Germany

We present a novel theoretical realization of an integer quantum Hall effect in a massless Dirac-electron system with a chiral boundary in a zero magnetic field. In particular, our findings apply to zigzag-terminated graphene.

Aula 3

16:50 – 18:30

MON2F3: Magnetism - Magnetic Properties and Structures I

Chair: G. Goya, Institute of Nanoscience of Aragón , Zaragoza, Spain

MON2F3.1 16:50

Magnetic properties of HfO$_2$ thin films — •Rose Marie Galera[1], Laurent Ranno[1], Nicolas Hadacek[1], Pierre Strobel[1], and Alexandre Nosov[2] — [1]Institut Néel, CNRS-UJF, BP 166, 38042 Grenoble Cedex 9, France — [2]Electric Phenomena Lab., Institute of Metal Physics, Ural Division of the Russian Academy of Sciences, S. Kovalevskoi str.18, GSP-170, 620041, Ekaterinburg, Russian Federation

HfO2 thin films grown by PLD on sapphire substrates under oxygen pressures, ranging from 10-7 to 10-1 mbar show no intrinsic ferromagnetic signal, irrespectively of the oxygen pressure during the deposition.

MON2F3.2 17:10

Ferromagnetism without magnetic impurities. — •Georges Bouzerar[1], Josef Kudrnovsky[2], Vaclav Drchal[2], and Franta Maca[2] — [1]Institut Neel, CNRS Grenoble (France) — [2]Institute of Physics, ASCR, Na Slovance 2, CZ-18040 Praha, Czech Republic

We present a detailed theoretical study for non magnetic impurity induced ferromagnetism in oxides. We show that extremely high Curie temperature can indeed be reached and propose a controlled way to high TC d0-ferromagnetism.

MON2F3.3 17:30

Magnetism of coupled Fe chains deposited on Ir(100) surfaces — •Riccardo Mazzarello[1], Andrea Dal Corso[1,2], and Erio Tosatti[1,2,3] — [1]SISSA, Trieste, Italy — [2]DEMOCRITOS–INFM, Trieste, Italy — [3]ICTP, Trieste, Italy

Density functional calculations show that Fe double chains adsorbed on a reconstructed (5x1) Ir(100) surface do not lose magnetism, but are no longer ferromagnetic. Their presence should also initiate the Ir surface deconstruction.

Aula 4

16:50 – 18:30

MON2F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity II

Chair: C. Castellani, Università La Sapienza, Roma, Italy

MON2F4.1 16:50

Ab-initio Fermi surfaces of underdoped cuprates — Alessio Filippetti and •Vincenzo Fiorentini — CNR-INFM-SLACS and Physics Dept., Cagliari University, Italy

We calculate from first-principles the Fermi surface of underdoped YCaBCO. Doped spin-polarized phases exhibit small Fermi pockets centered at nodal points. We suggest that quantum oscillations are related to magnetized areas of underdoped samples.

MON2F4.2 17:10

Superconducting pairing through the spin resonance mode in the high-Tc cuprates. — •Flora Onufrieva and Pierre Pfeuty — Laboratoire Léon Brillouin, CE-Saclay, Gif-surYvette 91191, France

We study theoretically a possibility of superconducting pairing through the famous spin resonance mode observed in all cuprates and we compare properties of the corresponding superconducting state with experimental properties of high-Tc cuprates.

MON2F4.3 17:30

Optical conductivity, Raman response and the correlation strength of high temperature copper-oxide superconductors — •Luca de' Medici[1], Armin Comanac[2], Massimo Capone[3,4], and Andrew J. Millis[2] — [1]Physics department and Center for Materials theory, Rutgers the state University of NJ, 136 Frelinghuysen Road, Piscataway, New Jersey — [2]Department of Physics, Columbia University, 538 W. 120th Street, New York, New York 10027, USA — [3]SMC, CNR-INFM, and Dipartimento di Fisica, Universit di Roma "La Sapienza", Piazzale A. Moro 2, I-00185, Rome, Italy — [4]ISC-CNR, Via dei Taurini 18, I-00185, Rome, Italy

We compare optical conductivity and Raman

Aula 6

16:50 – 18:30

MON2F6: Liquids, Disordered and Off-Equilibrium Systems - Out of Equilibrium Systems

Chair: R. Zecchina, Politecnico di Torino, Turin, Italy

MON2F6.1 (Invited) 16:50

Jamming versus Glass Transitions — •Jorge Kurchan[1], Romain Mari[1], and Florent Krzakala[2] — [1]PMMH, CNRS UMR 7636, Paris, France — [2]PCT, CNRS UMR Gulliver 7083, Paris, France

Jamming and glass transitions are two phenomena displayed by amorphous solids whose mutual relation is not clear. We discuss a family of models we have proposed to clarify the issue.

MON2F6.2 17:30

Intermittent response and spontaneous fluctuations in off-equilibrium aging dynamics — •Paolo Sibani — IFK, Syddansk Universitet, Campusvej 55, DK5230 Odense M

The off-equilibrium response of aging thermal system is controlled by (subordinated to) irreversible and intermittent outbursts of energy, or quakes. The temporal statistics of the latter is known, whence an analytical description is possible.

Nazionale TASC CNR-INFM, Basovizza SS-14, Km 163.5, IT-34012 Trieste, Italy

We present an experimental study of alkali metal doped copper-phthalocyanine, by means of photoemission and absorption spectroscopies. The evolution of the electronic structure and insulator-metal transitions upon doping are discussed.

Hall 207, 2538 The Mall, University of Hawaii, Honolulu, HI 96822 — [5]Department of Biology and Interdepartmental Laboratory for Electron Microscopy, University Roma *Tre*, Viale Guglielmo Marconi 446, 00146 Roma, Italy — [6]Department of Experimental Medicine and Biological Sciences, University of Roma *Tor Vergata*, Via di Tor Vergata, 135, 00133 Roma, Italy

We present here the 1.3 Å crystal structure of an archaeal globin, and of single site mutants that map the pathway of diatomic ligand binding (via diffusion through the protein matrix) to the heme.

MON2M.4 17:50

Functionalisation of Au and Si (111) surfaces by benzoic acid — •Xin Zhang — . Hahn-Meitner-Institut Berlin, Abteilung Silizium-Photovoltaik, Kekuléstr.5, 12459 Berlin, Germany

Benzoic acid layer was electrochemically deposited on clean Au and Si(111):H surfaces in both aqueous and non-aqueous solutions. Ex-situ infrared spectroscopic ellipsometry was applied to inspect the surface species.

MON2A.4 17:50

Quantum dot polarons:energy levels, relaxation and decoherence — •Gerald Bastard — LPA-ENS 24 rue Lhomond F75005 Paris (France)

We present calculations of the relaxation, spin flip lifetime, four wave mixing signal (FWMS) of the quantum dot polarons in InAs/GaAs QD's.

MON2C.3 17:50

Advanced NMR diffusion techniques to study bone marrow properties in trabecular bone network — •Silvia De Santis[1,2], Silvia Capuani[1,2], and Bruno Maraviglia[1,3] — [1]Physics Department, University of Rome "La Sapienza", P.zle A. Moro 2, 00185 Roma, Italy — [2]INFM-CNR SOFT, Physics Department, University of Rome "La Sapienza", P.zle A. Moro 2, 00185 Roma, Italy — [3]Enrico Fermi Center Roma, Italy

We investigated bone marrow in trabecular bone network with DTI and AD NMR methods. We found molecular diffusion anisotropy and fractal dimension to be important tools to describe the behaviour of water interacting with lipids.

MON2F1.3 17:50

Non-linear terahertz optics of graphene — •Sergey Mikhailov and Klaus Ziegler — Institute for Physics, University of Augsburg, Augsburg, Germany

Non-linear kinetic theory of the electromagnetic response of graphene is developed taking into account self-consistent field effects. Radiative decay is calculated. Conditions of efficient higher harmonics generation of terahertz radiation in graphene are determined.

MON2M.5 18:10

Efficient coupling in organic-inorganic systems: a theoretical study — Giuseppe Mattioli[1,2], Francesco Filippone[1], Paolo Giannozzi[3], Paola Alippi[1], and •Aldo Amore Bonapasta[1] — [1]Istituto di Struttura della Materia (ISM) CNR, Via Salaria Km. 29.5, CP 10, 00016 Monterotondo Stazione, Italy — [2]Dipartimento di Chimica, Università di Roma La Sapienza, P.le A.Moro 2, 00185 Roma, Italy — [3]Dept. of Physics, University of Udine and DEMOCRITOS National Simulation Center, via delle Scienze 208, 33100 Udine, Italy

A DFT study shows the achievement of an efficient organic-inorganic coupling between phthalocyanine molecules (OTiPc) and the TiO2 anatase surface, i.e., occurrence of surface-molecule chemical bonds and charge transfers of interest for novel hybrid materials.

MON2A.5 18:10

Electron and Exciton Energy Spectra and the Aharonov-Bohm Effect in Self-Assembled Ring-Like Nanostructures — •Vladimir Fomin — TFVS, Universiteit Antwerpen, Belgium — PSN, COBRA, TU Eindhoven, The Netherlands — PMS, State University of Moldova, Chisinau, Moldova

The electron and exciton energy spectra, the magnetization and the optical-transition probabilities are explained for strained $In_xGa_{1-x}As/GaAs$ self-assembled quantum rings. A theoretical model is developed using realistic parameters inferred from the cross-sectional scanning-tunneling microscopy data.

MON2C.4 18:10

Proteins in binary solvents: an analysis of solvation properties and interactions by neutron and X-ray scattering techniques — •Francesco Spinozzi[1], Flavio Carsughi[1,2], Maria Grazia Ortore[1], Raffaele Sinibaldi[1], and Paolo Mariani[1] — [1]Dipartimento di Scienze applicate ai Sistemi Complessi, Università Politecnica delle Marche, Ancona, Italy — [2]Institut für Festkörperforschung, Forschungszentrum, Jülich, Germany

Aqueous protein solutions in the presence of co-solvents have been investigated with SAXS and SANS. Data analysis allows to determine the equilibrium constant of the bulk/solvation-layer cosolvent exchange and the protein-protein interaction potential.

MON2F1.4 18:10

Ab initio numerical GW many body effects in the electronic structure of real free-standing graphene — •Paolo E. Trevisanutto[1,2], Christine Giorgetti[2,3], Lucia Reining[2,3], Massimo Ladisa[4], and Valerio Olevano[1,2] — [1]Institut Néel, CNRS & UJF, Grenoble, France — [2]European Theoretical Spectroscopy Facility (ETSF), France — [3]Laboratoire des Solides Irradiés, CNRS - CEA, École Polytechnique, Palaiseau, France — [4]Istituto di Cristallografia, CNR, Bari, Italy

The electron electron dynamic correlation effects in the real free standing graphene have been investigated by using an ab initio GW many body approximation.

Aula 3

Aula 4

Aula 6

measurements with DMFT calculations showing that correlations in cuprates are not as strong as previously believed, that antiferromagnetism is essential to obtain the insulating state and thus relevant in the whole phase diagram.

MON2F3.4 17:50

Interface exchange interactions in pulsed laser deposited CoPt/CoxNi(1-x)O films — •Sara Laureti[1], Elisabetta Agostinelli[1], Dino Fiorani[1], Alberto Maria Testa[1], Gaspare Varvaro[1], Amanda Generosi[2], Barbara Paci[2], and Valerio Rossi Albertini[2] — [1]ISM-CNR, Area della Ricerca Roma1, Via Salaria km 29.500- Monterotondo Scalo (RM) Italy — [2]ISM-CNR, Area della Ricerca Roma2, Via Fosso del Cavaliere, 100 (RM), Italy

The aim was to study the magnetic exchange interactions in fcc CoPt/CoxNi(1-x)O films grown by PLD. The system seems promising for obtaining exchange bias properties at room temperature, by modulation of the oxide stoichiometry.

MON2F3.5 18:10

Localization length from fine magneto-transport properties of $La_{0.5}Ba_{0.5}MnO_3$ — •Marcel Ausloos[1], Jean François Fagnard[2], Philippe Vanderbemden[2], Janusz Mucha[3], Vadim Drozd[4], and Marek Pekala[5] — [1]SUPRATECS, B5a, Liege — [2]Montefiore Electricity Institute, SUPRATECS, B28, Univ. Liege, BE — [3]PAN, Low Temperature and Structure Research, Wroclaw, PL — [4]Dept. Chemistry, Kiev National Taras Shevchenko University, Kiev, UA — [5]Dept. Chemistry, Univ. Warszawa, Warsaw, PL

Microscopic parameters and characteristic lengths have been obtained for $La_{0.5}Ba_{0.5}MnO_3$ through structural and magneto-transport investigations. Several high temperature, near 300K, ferromagnetic / metallic and paramagnetic / semiconducting phase transitions are found, characterized and discussed.

MON2F4.4 17:50

Non-Fermi liquid regime in the two-dimensional Hubbard model at weak-to-moderate coupling — •Hermann Freire[1], Eberth Correa[2], and Alvaro Ferraz[2] — [1]Max-Planck-Institute for Solid State Research, D-70569 Stuttgart, Germany — [2]International Center for Condensed Matter Physics, Universidade de Brasilia, Caixa Postal 04667, 70910-900 Brasilia-DF, Brazil

We study the 2D Hubbard model at weak-to-moderate coupling within a two-loop field-theoretical renormalization group approach. As a result, we find evidence of a non-Fermi liquid regime right in between the antiferromagnetic insulating and the $d_{x^2-y^2}$-wave superconducting phases.

MON2F4.5 18:10

Non-Fermi liquid behavior in the periodic Anderson model — •Adriano Amaricci[1,2], Giovanni Sordi[1], and Marcelo Rozenberg[1,3] — [1]Laboratoire de Physique des Solides, Université de Paris-Sud, Orsay 91495, France — [2]Dipartimento di Fisica, Università di Roma "Tor Vergata", Roma 00133, Italy. — [3]Departamento de Física, Universidad de Buenos Aires, Buenos Aires (1428), Argentina.

We show, within DMFT, the existence of a non-Fermi liquid state in the periodic Anderson model. We show that, down to very small temperatures, coupling to long-wavelenght magnetic fluctuations isn't prerequisite to breakdown Fermi liquids.

MON2F6.3 17:50

First-order transition behaviour in presence of dilution in 3D — Luis Antonio Fernandez[1,3], •Antonio Gordillo-Guerrero[2,3], Victor Martin-Mayor[1,3], and Juan Jesus Ruiz-Lorenzo[2,3] — [1]Dept. Física Teórica. Universidad Complutense, 28040 Madrid. Spain. — [2]Dept. Física. Universidad de Extremadura, 06071 Badajoz. Spain. — [3]Instituto de Biocomputación y Física de Sistemas Complejos (BIFI), 50009 Zaragoza. Spain.

Using a novel microcanonical method (entropy, rather than free energy, is the basic magnitude) we found a first-order phase transition in the presence of quenched disorder (for the site-diluted four states Potts model).

MON2F6.4 18:10

Shear-induced inhibition of the crystal nucleation and growth of crystals from solution — •Geoffrey Mitchell[1], Supatra Wangsoub[2], Fred Davis[1], and Robert Olley[1] — [1]Polymer Science Centre, University of Reading, Whiteknights, Reading RG6 6AF UK — [2]Department of Chemistry, Naresuan University, Phitsanulok 65000 Thailand

We show for the first time, that the nucleation and growth of crystals of a low molar mass compound from solution can be inhibited by shear flow which we attribute to a shear-dependent collision cross-section.

Monday

Aula Magna

8:45 – 9:30

TUEPL: Plenary 2

Chair: R. Ibarra, University of Zaragoza, Zaragoza, Spain

TUEPL.1 (Plenary) 8:45

Spintronics: Fundamentals and Recent Developments — •Albert Fert — UMP CNRS/Thales, 91767 Palaiseau, France

After an introduction on the fundamentals of spintronics and the discovery of GMR, I will review recent developments in this field: magnetic switching and microwave generation by spin transfer, spintronics with semiconductors and molecular spintronics.

9:40 – 11:00

TUE1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties I

Chair: H. Pfnür, Leibniz Universität Hannover, Hannover, Germany

TUE1M.1 (Invited) 9:40

Surface state in self-organized nanostructurated surfaces — •Daniel Malterre, Yannick Fagot-Revurat, Bertrand Kierren, and Clément Didiot — Laboratoire Physique des Matériaux, Nancy Université, BP 239, B.P. 239, F-54506 Vandoeuvre-lès-Nancy, FRANCE

In this contribution we present a study of the electronic properties of self-organized nanostructurated surfaces by Angle-Resolved-Photoemission Spectroscopy and Scanning Tunneling Spectroscopy.

Aula Amaldi

9:40 – 11:00

TUE1A: Semiconductor Physics - OD and 1D Systems

Chair: M. Rontani, S3 INFM-CNR, Modena, Italy

TUE1A.1 9:40

Site-Controlled Quantum Dots with Tunable Emission Energy — •Marco Felici[1], Pascal Gallo[1], Arun Mohan[1], Benjamin Dwir[1], Kirill Atlasov[1], Karl Fredrik Karlsson[1], Alok Rudra[1], Giorgio Biasiol[2], Lucia Sorba[2], and Eli Kapon[1] — [1]Laboratory of Physics of Nanostructures, Ecole Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland — [2]Advanced Materials and Devices group, TASC-INFM National Laboratory, Trieste, Italy

Growth of InGaAs quantum dots (QDs) in sub-μm pyramidal recesses enables a superior control of the QD position and emission energy. This is exploited to achieve optimal coupling between single QDs and photonic crystal cavities.

TUE1A.2 10:00

Optical Gain in Silicon Quantum Dots — •Elena Degoli[1], Roberto Guerra[2], Olivia Pulci[3], and Stefano Ossicini[1] — [1]Dipartimento di Scienze e Metodi dell'Ingegneria, Università di Modena e Reggio Emilia, 42100 Reggio Emilia, Italy — [2]Dipartimento di Fisica, Università di Modena e Reggio Emilia, 41100 Modena, Italy — [3]European Theoretical Spectroscopy Facility (ETSF) and CNR-INFM, Dipartimento di Fisica,

Aula Conversi

9:40 – 11:00

TUE1C: Joint Biological Physics & Life Sciences and Polymer Physics III

Chair: M. Bolognesi, University of Milano, Milano, Italy

TUE1C.1 (Invited) 9:40

Physical aspects in protein aggregation — •Tuomas Knowles[1], Mark Welland[1], and Christopher Dobson[2] — [1]Nanoscience Centre, University of Cambridge, CB30FF, Cambridge, UK — [2]Department of Chemistry, University of Cambridge, CB2 1EW, Cambridge, UK

This talk presents experimental and theoretical results on protein aggregation. The main focus will be on novel ways of probing and analysing the kinetics of amyloid growth and the mechanical properties of amyloid fibrils.

Aula 1

9:40 – 11:00

TUE1F1: Materials - Dynamics of Quasicrystals

Chair: T. Janssen, University of Nijmegen, Nijmegen, The Netherlands

TUE1F1.1 (Invited) 9:40

Vibrational Properties of Icosahedral Quasicrystal in Mg–Sc–Zn Alloy — •Marek Mihalkovic[1] and Marc de Boissieu[2] — [1]Institute of Physics, Slovak Academy of Sciences, 84511 Bratislava, Slovakia — [2]Sciences et Ingenierie des Materiaux et Procedes, INP Grenoble CNRS UJF, BP 75 38402 St Martin d'Heres Cedex, France

Vibrational properties of icosahedral quasicrystal with supreme structural quality, i-MgScZn, are studied using effective pair interactions fitted to the database of first–principles forces and structural energies.

Aula 3

9:40 – 11:00

TUE1F3: Magnetism - Magnetoelectronics I

Chair: A. D. Wieck, Ruhr-Universität, Bochum, Germany

TUE1F3.1 (Invited) 9:40

Magnetic tunnel junctions — •Paulo Freitas — INESC, Lisbon, Portugal

Magnetic tunnel junctions will be discussed.

Aula 4

9:40 – 11:00

TUE1F4: Superconductivity and Highly-Correlated Systems - New Materials with Strong Correlations I

Chair: O. Gunnarsson, Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany

TUE1F4.1 (Invited) 9:40

Strongly correlated superconductivity and Mott transition of expanded A_3C_{60} alkali fullerides — •Erio Tosatti[1,2,3], Massimo Capone[4], Michele Fabrizio[1,2,3], and Claudio Castellani[5] — [1]SISSA, Via Beirut 2/4, 34014 Trieste (Italy) — [2]DEMOCRITOS–INFM, Unità di Trieste, Via Beirut 2/4, 34014 Trieste (Italy) — [3]ICTP, Strada Costiera 11, 34014 Trieste (Italy) — [4]SMC, CNR-INFM Dipartimento di Fisica, Università "La Sapienza", P.le Aldo Moro 2,I-00185, Roma, Italy, and ISC-CNR,+Via dei Taurini 19, I-00185 Roma, (Italy) — [5]Dipartimento di Fisica, Università "La Sapienza", P.le Aldo Moro 2, I-00185, Roma, Italy

DMFT solution of a 3-band Hubbard model yields a phase diagram close to that of expanded alkali fullerides $A_3(spacer)C_{60}$, indicating that superconductivity in these materials is both phonon driven *and* strongly correlated, with similarities to cuprates and organics.

Aula 6

9:40 – 11:00

TUE1F6: Liquids, Disordered and Off-Equilibrium Systems - High Frequency Dynamics in Disordered Systems

Chair: G. Ruocco, Università La Sapienza, Roma, Italy

TUE1F6.1 (Invited) 9:40

Science and Challenges at the European Synchrotron Radiation Facility — •Francesco Sette — European Synchrotron Radiation Facility, Grenoble, France

The European Synchrotron Radiation Facility and its Users* Community are launching an innovative Upgrade Programme to address major research areas of Material Sciences in the next decade(s) which are relevant to nano-sciences, life-sciences, energy, transport and environment.

Aula Magna

TUE1M.2 10:20

Curved crystals: a smart approach to surface science — •Martina Corso[1], Frederik Schiller[2,3], Laura Fernandez[2], Javier Cordón[2], and Enrique Ortega[1,2,3] — [1]DIPC, Manuel Lardizábal 3, E-20018 San Sebastián, Spain — [2]Universdidad del Pais Vasco, Dpto. Física Aplicada I, Plaza Oñate 2, E-20018 San Sebastián, Spain — [3]Unidad de Física de Materiales CSIC/UPV, Manuel Lardizábal 3, E-20018 San Sebastián, Spa

The structural and electronic properties of Au(111) and Cu(111) curved samples are presented in view of STM and ARPES investigations. Their optimal use as set of nanotemplates is exploited with decoration experiments.

TUE1M.3 10:40

Electronic states of Cu vicinal surface nanopatterned by oxygen-induced reconstruction — •Carlos Eduardo Viol Barbosa, Jun Fuji, Giancarlo Pannacione, and Giorgio Rossi — TASC National Laboratory, INFM-CNR, SS 14, km 163.5, I-34012 Trieste, Italy

Control of oxygen dose on Cu(332) surface induces reconstructions with periodicity from 3 to 10 nm. We study electron confinement and magnetism of Fe nanowires obtained by using such structures as a template.

11:00 – 11:30: Coffee Break

Aula Amaldi

Università di Roma 'Tor Vergata', 00133 Roma, Italy

Ab-initio calculations of Si nanocrystals embedded in silicon-dioxide are presented considering different clusters dimensions, different oxide structure and the effect of disorder (glass) on the optoelectronic structure of the nanocrystals.

TUE1A.3 10:20

Binding Energies of Excitons and Trions in One-dimensional Structures — •Marina Semina, Rinat Sergeev, and Robert Suris — A.F. Ioffe Physico-Technical Institute, St Petersburg, Russian Federation

Binding energies of excitons and trions in isotropic quasi-1D systems including those with the attractive longitudinal potential are variationally calculated. Physically transparent, simple and rather accurate trial functions are suggested.

TUE1A.4 10:40

Shape Oscillations of SiGe Islands on Patterned Si(001) Substrates — •Jianjun Zhang[1], Dietmar Pachinger[1], Friedrich Schäffler[1], Vladimir Jovanovic[2], Lis Nanver[2], and Günther Bauer[1] — [1]Institut für Halbleiter und Festkörperphysik, Johannes Kepler Universität, Altenbergstrasse 69, A- 4040 Linz, Austria — [2]Laboratory of Electronic Components Technology and Materials, DIMES, Delft University of Technology, 2628 CT Delft, The Netherlands

The morphological evolution of SiGe islands on patterned Si(001) substrates at a low Ge growth rate has been investigated. After the formation of dome-shaped islands, the islands evolve to barn-shaped and subsequently back to dome- and finally to barn-shaped again.

11:00 – 11:30: Coffee Break

Aula Conversi

TUE1C.2 10:20

Melting and Crystallization Behavior of Long Chain n-Alkanes in Molecularly Thin Films at Solid/Air Interfaces — Ralf Koehler and •Hans Riegler — MPIKG, Potsdam, Germany

The phase behavior of thin films of long chain n-alkanes depends on film thickness. Very thin ("submonolayer") films melt (partially) already below ("pre-melting"), thicker films only above the bulk melting point ("surface freezing").

TUE1C.3 10:40

The Minimal Cu and Zn Binding Site Sequence in Amyloid Beta Peptides: a XAS Study — Velia Minicozzi[1], •Francesco Stellato[1], Massimiliano Comai[2], Mauro Dalla Serra[2], Cristina Potrich[2], Wolfram Meyer-Klaucke[3], and Silvia Morante[1,4] — [1]Dipartimento di Fisica, Università di Roma Tor Vergata and INFN, I-00133 Roma, Italy — [2]Consiglio Nazionale delle Ricerche, Fondazione Bruno Kessler, Istituto di Biofisica, Unità di Trento, I-38100 Povo (TN), Italy — [3]European Molecular Biology Laboratory, c/o DESY, Notkestrasse 85, D-22603 Hamburg, Germany — [4]CRS-SOFT, c/o Dipartimento di Fisica, Università di Roma La Sapienza, I-00185 Roma, Italy

X-ray Absorption Spectroscopy has been used to study the local structure around the metal in Aβ peptides complexed with Cu or Zn ions and we recognized two different structures according to the complexed metal ion.

11:00 – 11:30: Coffee Break

Aula 1

TUE1F1.2 10:20

Dynamical and structural hidden degrees of freedom in aperiodic composites — •Bertrand Toudic[1], Claude Ecolivet[1], Philippe Rabiller[1], Lydie Bourgeois[1], Mickaël Huard[1], Philippe Bourges[2], and Tomasz Breczewski[3] — [1]University of Rennes, France — [2]Laboratoire Léon Brillouin., CEA-CNRS, CE-Saclay, Gif/Yvette, France — [3]Universidad del Pais Vasco, Bilbao, Spain

Aperiodic crystals are long range ordered materials but without translational symmetry and consequently without Brillouin zone. Very original results concerning acoustic phonons and structural hidden degrees of freedom will be presented.

TUE1F1.3 10:40

Electromagnetic emission during plastic deformation in ionic crystals — Vassilios Hadjicontis[1], Claire Mavromatou[1], Tatiana Antsygina[2], and •Konstantin Chishko[2] — [1]University of Athens, Panepistimiopolis, Zografos, TK 157 84, Athens, Greece — [2]B. Verkin Institute for Low Temperature Physics and Engineering, 47 Lenin Ave., 61103 Kharkov, Ukraine

Mechanism of electromagnetic emission (EME) and correlation between EME and acoustic emission during plastic deformation of LiF monocrystals are investigated experimentally and interpreted theoretically. The results are important for material sciences and non-destructive testing applications.

11:00 – 11:30: Coffee Break

Aula 3

TUE1F3.2 10:20

EELS analysis of interfaces in magnetic junctions — •Giovanni Bertoni[1,2], Jo Verbeeck[2], Corinne Ulhaq-Bouillet[3], David Halley[3], and Thomas Fix[3] — [1]Fondazione Instituto Italiano di Tecnologia (IIT), via Morego 30, IT-16163 Genova, Italy — [2]Electron Microscopy for Materials Science (EMAT), University of Antwerp, Groenenborgerlaan 171, B-2020 Antwerp, Belgium — [3]Institut de Physique et Chimie des Matériaux de Strasbourg, UMR 7504 ULP-CNRS, 23 rue du Loess, BP 43, F-67034 Strasbourg Cedex 2, France

We present results on magnetic junctions consisting of few epitaxial layers. Electron energy loss in a scanning transmission microscope allows to investigate chemical concentrations and possible diffusion at metal/oxide interface.

TUE1F3.3 10:40

Resonant tunneling magnetoresistance in MnAs/GaAs/MnAs junctions — Garcia Vincent[1], Jaffrès Henri[2], George Jean Marie[2], •Marangolo Massimiliano[1], Eddrief Mahmoud[1], and Etgens Victor[1] — [1]INSP, Université Pierre et Marie Curie, Paris, France. — [2]Unite Mixte de Physique CNRS-Thales,Palaiseau

A resonant transport picture through a midgap defect band in a GaAs barrier can explain the intricate TMR bias dependence measured of fully epitaxied MnAs/GaAs/MnAs. The influence of an homogeneous distribution is also dicussed.

11:00 – 11:30: Coffee Break

Aula 4

TUE1F4.2 10:20

Band dispersions in fulleride films and bulk vs surface contribution in angle-resolved photoelectron spectroscopy — •Andrea Goldoni — Sincrotrone Trieste, s.s.14 km 163.5 in Area Science Park, 34012 Trieste, Italy

The presence of band dispersions in fulleride films was demonstrated by photoemission. The LUMO lineshape in K3C60 remain the same by reducing the photon energy down to 6 eV: bulk and surface properties are similar.

TUE1F4.3 10:40

Effects of Three-Dimensional Band Structure in Angle- and Spin Spin-Resolved Photoemission from Half-Metallic La2/3Sr1/3MnO3 — •Juraj Krempasky — Paul Scherrer Institut, CH-5232 Villigen - PSI, Switzerland

We present an angle- and spin-resolved photoemission study of half-metallic LSMO. A reduction of the spin contrast is compared to simulations.

11:00 – 11:30: Coffee Break

Aula 6

TUE1F6.2 10:20

High frequency dynamics and structural relaxation process in liquid ammonia — •Paola Giura[1], Roberta Angelini[2], Frederic Datchi[1], Giancarlo Ruocco[2], and Francesco Sette[3] — [1]IMPMC, Université Pierre et Marie Curie-Paris 6, 140 Rue de Lourmel, Paris, F-75015 — [2]CNR-INFM CRS-SOFT Università di Roma "La Sapienza" P.zle Aldo Moro 2, I-00185, Roma, Italy — [3]European Synchrotron Radiation Facility, Boite Postale 220, Grenoble, France

The THz timescale dynamic structure factor of l-NH3 is reported. The structural relaxation time and strength are extracted and the influence of the hydrogen bond and of the network connectivity on them pointed out.

TUE1F6.3 10:40

The Boson peak and its relation with acoustic attenuation in glasses — •Benoit Ruffle[1], Dmitri Pashin[2], Eric Courtens[1], and René Vacher[1] — [1]Laboratoire des Colloides, Verres et Nanomateriaux, Université Montpellier II, F-34095 Montpellier Cedex 5, France — [2]Saint Petersburg State Technical University, 195251 Saint Petersburg, Russia

Recent experimental results on the density of states and on the acoustic modes of glasses in the THz region are reviewed and compared to the predictions of existing theories.

11:00 – 11:30: Coffee Break

Aula Magna

11:30 – 12:50

TUE2M: Surface, Interface and Low-Dimensional Physics - Electronic Properties II

Chair: E. Vlieg, Radboud University, Nijmegen, The Netherlands

TUE2M.1 11:30

Dangling-bond transitions in single-domain diamond C(111)2x1 surfaces — •Gianlorenzo Bussetti[1], Claudio Goletti[1], Piero Chiaradia[1], and Trevor Derry[2] — [1]Dipartimento di Fisica and CNISM, Università di Roma Tor Vergata, Roma, Italy — [2]School of Physics and Centre of Excellence in Strong Materials, University of Witwaterstrand, Johannesburg, South Africa

Reflectance Anisotropy Spectroscopy has been applied to measure the optical gap between filled and empty intrinsic surface states on a single-domain diamond C(111)-2x1. Therefore the semiconducting character of this surface has been definitively ascertained.

TUE2M.2 11:50

Atomic and electronic structure of non-polar 6H-SiC(11-20) and GaN(1-100) surfaces — Marco Bertelli[1], M Wenderoth[1], A Rizzi[1], J Homoth[1], P Loeptien[1], J Malindretos[1], R G Ulbrich[1], M C Righi[2], L Martin-Samos[2], •C M Bertoni[2], and A Catellani[3] — [1]Physikalisches Institut and Virtual Institute of Spin Electronics (VISel), — [2]INFM-CNR national center (S3), Universita' di Modena e Reggio E., CNISM, Consorzio Interuniversitario per le Scienze Fisiche della Materia. — [3]CNR-IMEM, Parco Area delle Scienze, 37A, I-43010 Parma, and S3, Italy

Filled and empty states STM topographies with atomic corrugation were measured for non-polar 6H-SiC(11-20) and GaN(1-100) surfaces. The experimental STM topographies show unreconstructed surfaces for both 6H-SiC and GaN in agreement with theory.

TUE2M.3 12:10

Hydrogen-induced plastic deformation of rare earth metal thin films and comparison with corresponding nanoparticles — •Mathias Getzlaff[1] and Astrid Pundt[2] — [1]University of Düsseldorf, D-40225 Düsseldorf, Germany — [2]University of Göttingen, D-37077

Aula Amaldi

11:30 – 12:50

TUE2A: Semiconductor Physics - Quantum Transport

Chair: V. Fomin, Universiteit Antwerpen, Belgium

TUE2A.1 11:30

Impact of classical forces and decoherence in three-terminal Aharonov-Bohm devices — •Elia Strambini[1], Vincenzo Piazza[1], Fabio Beltram[1], Giorgio Biasiol[2], and Lucia Sorba[1,2] — [1]NEST INFM-CNR & Scuola Normale Superiore, I-56126 Pisa, Italy — [2]Laboratorio Nazionale TASC INFM-CNR, I-34012 Trieste, Italy

We report on the coherent transport properties of a three terminal Aharonov-Bohm ring realized on a high-mobility GaAs/AlGaAs heterostructure. Experimental data are compared with a novel scattering-matrix model incorporating decoherence and Lorentz forces

TUE2A.2 11:50

Manifestation of Spin-Orbit Interaction in Tunneling Between Two Quantum Wells — •Igor Rozhansky and Nikita Averkiev — Ioffe Physical Technical Institute

Effect of spin-orbit interaction on the tunneling between two 2D electron layers is considered with particular attention addressed to the manifestation of Rashba and Dresselhaus types in the tunneling conductance in zero magnetic field.

TUE2A.3 12:10

Spin Hall Effect in a 2DEG with Magnetic Couplings — •Peter Schwab[1], Michael Dzierzawa[1], Cosimo Gorini[1], Mirko Milletari[2], and Roberto Raimondi[2] — [1]Institut für Physik, Universität Augsburg, 86135 Augsburg, Germany — [2]CNISM and Dipartimeto di Fisica

Aula Conversi

11:30 – 12:50

TUE2C: Joint Biological Physics & Life Sciences and Polymer Physics IV

Chair: F. Boué, Laboratoire Léon Brillouin CNRS-CEA Saclay, Gif-sur-Yvette, France

TUE2C.1 (Invited) 11:30

Mesoscale simulations of polymers in external fields — •Roland G. Winkler — Research Centre Juelich, Institute of Solid State Research, 52425 Juelich, Germany

Hybrid mesoscale computer simulations are exploited to study the non-equilibrium dynamics of polymer systems. Results for star-like polymers in shear flow as well as polymers confined in microchannels will be presented.

TUE2C.2 12:10

Strong Repulsive Interactions in Polyelectrolyte-Liposome Clusters close to the Isoelectric Point: a Sign of an Arrested State — •Simona Sennato, Domenico Truzzolillo, Federico Bordi, and Cesare Cametti — Dipartimento di Fisica and INFM-CRS SOFT, Uni-

Aula 1

11:30 – 12:50

TUE2F1: Materials - Multiferroics

Chair: A. Almeida, Universidade do Porto, Porto, Portugal

TUE2F1.1 (Invited) 11:30

New Results on Magnetoelectric Multiferroics — •James F. Scott — Cambridge University, Cambridge, United Kingdom

Report on the discovery of new phases in bismuth ferrite at high temperatures and pressures. Report on magnetoelectric transitions at 140K and 200K. Results on the one-cent room-temperature multilayer Ni/BaTiO3 structure with 81 to 271 layers.

TUE2F1.2 12:10

High-temperature structural transformations in Pb-based perovskite-type relaxor ferroelectrics — •Boriana Mihailova[1], Bernd Maier[1], Carsten Paulmann[1], Thomas Malcherek[1], Bernd Guettler[2], Marin Gospodinov[3], and Ulrich Bismayer[1] — [1]University

Aula 3

11:30 – 12:50

TUE2F3: Magnetism - Magnetoelectronics II

Chair: P. Freitas, INESC, Lisbon, Portugal

TUE2F3.1 (Invited) 11:30

Current-induced Domain Wall Dynamics — •Mathias Kläui — Fachbereich Physik and Zukunftskolleg, University of Konstanz, Konstanz, Germany

Current-induced domain wall excitations by pulses and AC currents are comprehensively reviewed. Direct imaging as well as magnetotransport measurements are employed to determine wall motion, wall spin structure transformations and oscillations.

TUE2F3.2 12:10

Spin torque oscillator using a tilted easy-axis fixed layer — •Yan Zhou, Chao Lin Zha, Stefano Bonetti, Johan Persson, and Johan Åkerman — Department of Microelectronics and Applied Physics, Royal Institute of Technology, Electrum 229, 164 40 Kista, Sweden

Aula 4

11:30 – 12:50

TUE2F4: Superconductivity and Highly-Correlated Systems - New Materials with Strong Correlations II

Chair: F. Onufrieva, Laboratoire Léon Brillouin, CE-Saclay, Gif-surYvette, France

TUE2F4.1 11:30

$LaNiO_3/LaAlO_3$ heterostructures - a possible analogon to high-T_c cuprates — •Philipp Hansmann[1], Alessandro Toschi[1], Xiaoping Yang[1], Giniyat Khaliullin[1], Ole Krogh Andersen[1], and Karsten Held[1,2] — [1]Max Planck Institute for Solid State Research, Heisenbergstraße 1, D-70569 Stuttgart, Germany — [2]Institute for Solid State Physics, Vienna University of Technology, 1040 Vienna, Austria

We study the effect of strong correlations in $LaNiO_3/LaAlO_3$ heterostructures with LDA+ DMFT to investigate possible analogies to isoelectronic cuprate structures. The paramagnetic phase is metallic with strong antiferromagnetic flucuations, similar to the cuprates.

TUE2F4.2 11:50

Electric pulse induced insulator to metal transition and possible superconductivity in the $GaTa_4Se_8$ Mott insulator — •Vaju Cristian[1], Cario Laurent[1], Corazze Benoit[1], Janod Etienne[1], Dubost Vincent[2], Cren Tristan[2], Roditchev Dimitri[2], Braithwaite Daniel[3], and Chauvet Olivier[1] — [1]Institut des Materiaux Jean Rouxel (IMN), Universite de Nantes, CNRS, 2 rue de la Houssiniere, 44322 NANTES, France — [2]Institut des Nanosciences de Paris (INSP), CNRS UMR 75-88, Universite Paris 6 (UPMC), 140 rue de Lourmel, 75015 Paris, France — [3]INAC, SPSMS, CEA Grenoble, 17 rue de Martyrs, 38054 GRENOBLE, France

$GaTa_4Se_8$ is a fragile Mott insulator which undergoes a metal-insulator transition (MIT) under pressure. Here we show that application of short electric pulses induces an Electronic Phase Separation, a non-volatile MIT and granular superconductivity.

TUE2F4.3 12:10

Low-energy electrodynamics and metal to insulator transition in strongly correlated vanadium oxides — •Stefano Lupi — Dipartimento di Fisica, University of Rome La Sapienza

In this contribution the Mott-Hubbard physics of strongly correlated vanadium oxides will be dis-

Aula 6

11:30 – 12:50

TUE2F6: Liquids, Disordered and Off-Equilibrium Systems - Soft Matter

Chair: G. Ruocco, Università La Sapienza, Roma, Italy

TUE2F6.1 11:30

Ideal Foam Models via Surface Energy Minimization — •Frank Heilmann — BASF SE, 67056 Ludwigshafen, Germany

A modeling approach for creating ideal foam morphologies is presented. The surface energy of fluids with infinite disjoining pressure is minimized. Membranes of tunable thickness at constant density are created. The chord lengths are studied.

TUE2F6.2 11:50

Minimal surfaces in soft matter: statistical physics meets differential geometry — •Oksana Manyuhina, Annalisa Fasolino, and Mikhail Katsnelson — Heyendaalseweg 135, 6525 AJ Nijmegen, The Netherlands

We study topological changes in liquid crystals and self-assembled vesicles due to external constraints. We show that the minimal surfaces, with vanishing bending energy, is a natural way to describe these soft materials.

TUE2F6.3 12:10

Experimental Evidence of Different Arrested States in a Charged Colloidal System — •Barbara Ruzicka — Research Center SOFT INFM-CNR Dipartimento di Fisica Universita' "La Sapienza"

Structure factor measurements on a charged col-

Göttingen, Germany

Surface modification of thin Gd films and high islands representing nanoparticles during hydrogen adsorption as well as absorption has been investigated on the nanometer scale by means of scanning tunnelling microscopy.

"E. Amaldi", Universita di Roma Tre, Via della Vasca Navale 84, 00146 Roma, Italy

We examine the influence of magnetic impurities and magnetic fields on the spin Hall effect in a 2DEG. In both cases we find a finite spin Hall conductivity, for which we give explicit expressions.

versita' di Roma "La Sapienza" Piazzale A. Moro 2,I-00185 Rome, Italy

We present some experimental evidences that the dynamics of the cluster phase occurring in the re-entrant condensation of oppositely charged polyions-liposomes system possibly yields to an arrested state close to the isoelectric point.

of Hamburg, Hamburg, Germany — [2]PTB Braunschweig, Braunschweig, Germany — [3]Bulgarian Academy of Sciences, Sofia, Bulgaria

Structural transformations in Pb-based relaxor ferroelectrics are studied by polarized Raman scattering and x-ray diffraction applied to PbSc0.5Ta0.5O3 and Pb0.78Ba0.22Sc0.5Ta0.5O3. The temperature evolution of phonon anomalies gives new insights into the development of polar nanoregions.

TUE2M.4 12:30

Structure and Optical Properties of the Sb-Stabilized GaSb(001) Surface — •Conor Hogan[1,2], Rita Magri[3], and Rodolfo Del Sole[1] — [1]Department of Physics and European Theoretical Spectroscopy Facility (ETSF), University of Rome "Tor Vergata", Via della Ricerca Scientifica 1, I-00133 Roma, Italy — [2]Consiglio Nazionale delle Ricerche (CNR-INFM) — [3]CNR-INFM-S3 and Dipartimento di Fisica, University of Modena and Reggio Emilia, Via Campi 213/A, I-41100 Modena, Italy

We perform theoretical calculations of the surface optical response and total energy for various models of the Sb-rich GaSb(001) surface, and compare with experiment. The importance of spin-orbit coupling is examined.

TUE2A.4 12:30

Exchange energies for two-dimensional systems: exploring Gaussian approximations — •Stefano Pittalis[1,2], Esa Rasanen[1,2], and Eberhard K. U. Gross[1,2] — [1]Freie Universität Berlin, Arnimallee 14, D-14195 Berlin, Germany — [2]European Theoretical Spectroscopy Facility (ETSF)

Motivated by the need of improved approximate density functionals for the energies of two-dimensional systems, we consider Gaussian approximations for the exchange energy of spin-polarized, current-carrying states. Good performance is verified for two-dimensional quantum dots.

TUE2C.3 12:30

Chain dynamics, segmental order and excluded-volume effects in swollen networks and polymer melts — •Kay Saalwächter[1] and Jens-Uwe Sommer[2] — [1]Institut für Physik, Martin-Luther-Universität Halle-Wittenberg, Halle, Germany — [2]Leibniz-Institut für Polymerforschung, Dresden, Germany

We present applications of a new NMR technique characterizing local anisotropic mobility of polymer chain segments on universal excluded-volume effects in swollen elastomers, and on reptation dynamics in different types of polymer melts.

TUE2F1.3 12:30

Electronic and dielectric properties of CaX-TiO (X=Cu,Zn) — •Paola Alippi[1], Vincenzo Fiorentini[2], Alessio Filippetti[2], and Pietro Delugas[3] — [1]CNR-ISM, Rome, Italy — [2]CNR-SLACS, Cagliari, Italy — [3]CNR-IMM, Catania, Italy

We have analyzed using density-functional, density-functional-perturbation, and self-interaction corrected density-functional theory (pSIC), the electronic and dielectric structure of the Mott insulator CaX3Ti4O12 with X=Cu (CCTO) and Zn (CZTO).

Tuesday

12:50 – 14:40: Lunch Break

12:50 – 14:40: Lunch Break

12:50 – 14:40: Lunch Break

12:50 – 14:40: Lunch Break

14:40 – 16:20

TUE3M: Surface, Interface and Low-Dimensional Physics - Organic Interfaces

Chair: A. Selloni, Princeton University, Princeton, USA

14:40 – 16:20

TUE3A: Semiconductor Physics - Graphene

Chair: N. Peres, University of Minho, Braga, Portugal,

14:40 – 16:20

TUE3C: Joint Biological Physics & Life Sciences and Polymer Physics V

Chair: T. Knowles, University of Cambridge, Cambridge, UK

14:40 – 16:20

TUE3F1: Methods for Cultural Heritage and Vacuum Science

Chair: E. Cazzanelli, Università della Calabria, Italy

TUE3M.1 (Invited) 14:40

Understanding the Structure and Function of Self-Assembled Organometallic Nanomaterials by Computer Modeling — •Stefano Fabris — CNR-INFM DEMOCRITOS Theory@ELETTRA group and Scuola Internazionale Superiore di Studi Avanzati (SISSA), via Beirut 2-4, Trieste (Italy)

Surface-supported metal-organic networks formed by benzoic acids and metal centers are studied with DFT calculations. I will describe the atomistic and electronic structures, the formation mechanisms, and the novel magnetic and catalytic properties of these nanostructures.

TUE3A.1 14:40

Optical conductivity of graphene in the visible region of the spectrum — •Tobias Stauber[1], Nuno Peres[1], and Andre Geim[2] — [1]Center of Physics and Physics Department, University of Minho, P-4710-057 Braga, Portugal — [2]Manchester Centre for Mesoscience and Nanotechnology, University of Manchester, Manchester M12 9PL, United Kingdom

We compute the optical conductivity of graphene beyond the Dirac cone approximation, including trigonal warping and next-nearest neighbour hopping. We then obtain the transmission and reflection coefficients which are also valid in the visible-optics regime.

TUE3C.1 (Invited) 14:40

Structure and assembly of membrane proteins in native membranes by atomic force microscopy (AFM) — •Simon Scheuring — Institut Curie, Paris, France

Using Atomic force microscopy (AFM) as medical nano-imaging tool, we imaged healthy and cataract-affected eye lens membranes at unprecedented resolution. Crucial differences in organization of membrane channels, aquaporin-0 and connexons, characterize the pathological case.

TUE3F1.1 (Invited) 14:40

The use of Infrastructural Facilities for Cultural Heritage Research — Mark Dowsett[1] and •Annemie Adriaens[2] — [1]Analytical Science Projects Group, Department of Physics, University of Warwick, Coventry, CV4 7AL UK — [2]Department of Analytical Chemistry, Universiteit Gent, Krijgslaan 281-S12, B9000 Gent, Belgium

Infrastructural facilities such as synchrotron light sources, neutron sources and particle accelerators are used increasingly for heritage science. We show some of the benefits through examples, and briefly discuss problems in need of solution.

Aula 3

A novel spin torque oscillator, where the magnetization of the fixed layer is tilted out of the film plane, has been theoretically shown to be capable of strong microwave signal generation in zero magnetic field.

TUE2F3.3 12:30

Localized Rashba interaction induced current modulation in quantum wires — David Sanchez[1], Llorenc Serra[1,2], and •Rosa Lopez[1] — [1]Departament de Fisica, Universitat de les Illes Balears, E-07122 Palma de Mallorca, Spain — [2]IFISC, Instituto de Fisica Interdisciplinar y Sistema Complejos (CSIC-UIB), E-07122 Palma de Mallorca, Spain

We analyze the transport properties of ballistic quantum wires with a localized spin-orbit (Rashba) interaction. We find a strongly modulated current that can be tuned with external gates.

12:50 – 14:40: Lunch Break

14:40 – 16:20

TUE3F3: Magnetism - Magnetic Characterization Using Sinchrotron Radiation

Chair: C. Kapusta, Applied Computer Sciences AGH University of Science and Technology Av. Mickiewicza, Krakow, Poland

TUE3F3.1 (Invited) 14:40

Characterization of magnetization dynamics by scanning transmission x-ray microscope — •Tolek Tyliszczak[1], Yves Acremann[2], Bartel Van Waeyenberge[3], and Hermann Stoll[3] — [1]Advanced Light Source, Lawrence Berkeley National Laboratory, MS-6-2100, 1 Cyclotron Rd. Berkeley, CA, 94720, USA — [2]Stanford Synchrotron Radiation Laboratory, Stanford, CA, 94309, USA — [3]Max Planck Institute for Metals Research, Heisenbergstr.3, 70596 Stuttgart, Germany

Soft X-ray Scanning Transmission Microscope (STXM) at the ALS has been used over last few years for many unique experiments of characterization of magnetization dynamics on 20 nm scale with 100 ps time resolution.

Aula 4

cussed. In particular both the temperature and pressure dependence of the low-energy excitations around the metal-to-insulator transition (MIT) in V2O3 and VO2 have been measured.

TUE2F4.4 12:30

Orbital order and the origin of structural distortion in $MgTi_2O_4$ — •Alexander Yaresko[1], Stefano Leoni[2], Natalia Perkins[3], Helge Rosner[2], and Luis Craco[2] — [1]Max Planck Institute for Solid State Research, Stuttgart, Germany — [2]Max Planck Institute for Chemical Physics of Solids, Dresden, Germany — [3]University of Wisconsin - Madison, USA

On the base of LSDA+U results we analyze how $MgTi_2O_4$ undergoes a transition to a canted orbitally ordered state. Orbital order stabilizes the magnetic ground state and controls the degree of structural distortions.

12:50 – 14:40: Lunch Break

14:40 – 16:20

TUE3F4: Superconductivity and Highly-Correlated Systems - New Materials with Strong Correlations III

Chair: J. Lorenzana, BTU Cottbus, Cottbus, Germany

TUE3F4.1 14:40

Spin susceptibility of two-dimensional electron gas in real devices — •Stefania De Palo[1,2], Mariapia Marchi[1], Saverio Moroni[1], and Gaetano Senatore[1,2] — [1]INFM-CNR DEMOCRITOS National Simulation Center, Trieste, Italy — [2]Dipartimento di Fisica Teorica, Universita‘ di Trieste, Strada Costiera 11, 34014 Trieste, Italy

Spin susceptibility enhancement on lowering carrier density in two-dimensional devices is widely observed. Including real devices properties, Quantum Monte-Carlo calculations achieve quantitive agreement where perturbative calculations obtain it only in selected cases.

Aula 6

loidal system show the evolution with waiting time from an ergodic to a non ergodic state. Both inhomogeneous and homogeneous states are obtained only by changing sample's volume fraction.

TUE2F6.4 12:30

Gelation as arrested phase separation in short-ranged attractive colloids — •Emanuela Zaccarelli — CNR-INFM-SOFT, Rome, Italy

By combining confocal microscopy and simulations, we present quantitative evidence that gelation is driven by an arrested liquid-gas separation in colloidal systems with short-range polymer-induced depletion attraction[1].

[1] Lu PJ, Zaccarelli E et al. NATURE in press (2008)

12:50 – 14:40: Lunch Break

14:40 – 16:20

TUE3F6: Liquids, Disordered and Off-Equilibrium Systems - Quantum Fluids

Chair: S. Franz, LPTMS Université Paris-Sud 11, Paris, France

TUE3F6.1 (Invited) 14:40

Statistical Mechanics of Steiner Trees — •Riccardo Zecchina — Politecnico di Torino, Turin, Italy

The Minimum Weight Steiner Tree (MST) is an important combinatorial optimization problem over networks with many applications. We introduce a new optimization algorithm for MST and discuss the statistical mechanics properties on random graphs.

TUE3A.2 15:00

Temperature dependent mechanical properties of graphene — •Konstantin V. Zakharchenko, Jan H. Los, Mikhail I. Katsnelson, and Annalisa Fasolino — Institute for Molecules and Materials, Radboud University Nijmegen, Heyendaalseweg 135, 6525 AJ Nijmegen, The Netherlands

The thermodynamical behaviour of graphene is still largely unexplored. We present the temperature dependence of structural and mechanical properties of graphene, calculated by large scale atomistic Monte Carlo simulations based on the bond-order-potential LCBOPII.

TUE3M.2 15:20

Self-organization of C60 molecules deposited on Ge(111)-c(2x8): an STM and STS study — •Mattia Fanetti[1,2], Cinzia Cepek[2], and Luca Gavioli[1] — [1]Dipartimento di Matematica e Fisica, Università Cattolica del Sacro Cuore, via dei Musei 41, I-25121, Brescia, Italy — [2]CNR-TASC-INFM National Laboratory, Area Science Park, S.S. 14, Km 163.5, I-34012 Basovizza (TS), Italy

Sub-molecular resolution STM allowed to observe the arrangement and the orientation of C60 molecules in the (3sqrt3 x 3sqrt3)R30° and (sqrt13 x sqrt13)R14° phases of C60/Ge(111) single layer. STS acquired on differently oriented molecules are compared with UPS spectra.

TUE3A.3 15:20

Molecular Adsorbates and Doping of Graphene — •Tim O. Wehling[1], Mikhail I. Katsnelson[2], and Alexander I. Lichtenstein[1] — [1]I. Institut für Theoretische Physik, Universität Hamburg, Jungiusstraße 9, D-20355 Hamburg, Germany — [2]Institute for Molecules and Materials, Radboud University of Nijmegen, Heijendaalseweg 135, 6525 AJ Nijmegen, The Netherlands

We consider molecular adsorbates on graphene and explain its chemical sensor properties by means of ab-initio theory. Open-shell adsorbates are shown to cause strong doping and the importance of graphene's substrate is elucidated.

TUE3C.2 15:20

Combining magnetic alignment and X-ray scattering for in situ measurement of the internal organization of supramolecular aggregates — •Jeroen Gielen[1], Martin Wolffs[2], Giuseppe Portale[3], Peter Christianen[1], Albert Schenning[2], Bert Meijer[2], Oliver Henze[4], Andreas Kilbinger[4], Jim Feast[4], and Jan Kees Maan[1] — [1]IMM, High Field Magnet Laboratory HFML, University of Nijmegen, Nijmegen, The Netherlands — [2]Eindhoven University of Technology, Eindhoven, The Netherlands — [3]Netherlands Organisation for Scientific Research (NWO), DUBBLE@ESRF, Grenoble, France — [4]University of Durham, Durham, U.K.

We have studied the supramolecular self-assembly process of sexithiophene molecules using strong magnetic fields. The internal molecular arrangement of the aggregates was determined in solution by small angle X-ray scattering and magnetic birefringence experiments.

TUE3F1.2 (Invited) 15:20

Nanoscience for the Conservation of Cultural Heritage — •Pierro Baglioni — University of Florence, Department of Chemistry and CSGI, Florence, Italy

Micelles and microemulsions are the most used systems in detergency. Their conjugation in a composite system is practically unexplored. Gels are used in several applications but usually are not associated to microemulsions or nanoparticles.

TUE3M.3 15:40

Ab initio simulations of Protein Surface Interactions mediated by Water — Arrigo Calzolari[1], •Stefano Corni[1], Rosa Di Felice[1], Giancarlo Cicero[2], and Alessandra Catellani[3,1] — [1]CNR-INFM National Center on nanoStructures and bioSystems at Surfaces (S3), Modena Italy — [2]Polytechnic of Torino, Department of Physics, 10129, Torino, Italy — [3]CNR-IMEM, Parco Area delle Scienze, 37A, I-43100 Parma

TUE3A.4 15:40

Gap tunability in bilayer graphene — •Eduardo V. Castro[1], Kostya S. Novoselov[2], Sergey V. Morozov[2], Nuno M. R. Peres[3], João M. B. Lopes dos Santos[1], Johan Nilsson[4], Francisco Guinea[5], Andre K. Geim[2], and Antonio H. Castro Neto[4] — [1]CFP and Departamento de Física, Faculdade de Ciências Universidade do Porto, P-4169-007 Porto, Portugal — [2]Department of Physics and Astronomy, University of Manchester, Manch-

TUE3C.3 15:40

Main phase transition of supported lipid bilayers studied by temperature controlled AFM: effect of different physical parameters — •Andrea Alessandrini[1,2], Heiko Seeger[1], Giulio Marino[1], and Paolo Facci[1] — [1]CNR-INFM-S3 Via Campi 213/A Modena Italy — [2]Department of Physics, University of Modena and Reggio Emilia, Modena, Italy

The main phase transition of supported lipid bi-

Aula 3

TUE3F3.2 15:20

MBE and ion implanted MnGe alloys: a XAS study — •Roberto Gunnella[1], Nicola Pinto[1], Lorenzo Morresi[1], Luca Ottaviano[2], and Maurizio Passacantando[2] — [1]Dipartimento Fisica-CNISM Universita' di Camerino — [2]Dipartimento di Fisica-Universita' dell'Aquila, via Vetoio 67100-Coppito L'Aquila

The comparative study shows how the introduction of a digital layer alloy hampers the atomic diffusion of Mn from the tetrahedral interstitial sites generally occupied during coevaporation.

TUE3F3.3 15:40

First-principles calculation of X-Ray dichroic spectra at $L_{2,3}$ edges — •Lorenzo Pardini[1], Valerio Bellini[2], and Franca Manghi[2] — [1]Physics Department, University of Modena and Reggio Emilia, Via Campi 213/A, 41100 Modena, Italy — [2]CNR-INFM-S3, Via Campi 213/A, 41100 Modena, Italy

We present a density functional investigation of X-Ray magnetic circular dichroism spectroscopy,

Aula 4

TUE3F4.2 15:00

Possible Finite Temperature Phase Transition in Strongly Correlated GaAs Two-dimensional Holes in Zero Field — •Jian Huang[1], Jian-Sheng Xia[2], Daniel Tsui[3], Loren Pfeiffer[4], and Ken West[4] — [1]Department of Physics, Taylor University, Upland, IN 46989, USA — [2]Department of Physics, University of Florida, Gainesville, Florida, USA — [3]Department of Electrical Engineering, Princeton University, Princeton, New Jersey 08544, USA — [4]Bell Labs, Lucent Technologies, Murray Hill, New Jersey 07974, USA

A conductivity kink observed in the T-dependence of strongly correlated two-dimensional holes in undoped GaAs-FETs likely indicates a phase transition. The density-dependence of the kink locations exhibits a dichotomy at the critical density of MIT.

TUE3F4.3 15:20

Strong electronic correlations in Li_xZnPc organic metals — •Marta Filibian[1], Pietro Carretta[1], Maria Cristina Mozzati[1], Paolo Ghigna[2], Giorgio Zoppellaro[3], and Mario Ruben[3] — [1]Department of Physics " A. Volta", University of Pavia, Via Bassi 6, I-27100 Pavia, Italy — [2]Department of Physical Chemistry "M. Rolla", University of Pavia, V.le Taramelli 16, I-27100 Pavia, Italy — [3]Institut für Nanotechnologie, Forschungszentrum Karlsruhe, 76021 Karlsruhe, Germany

Li_xZnPc are novel strongly correlated metals. From NMR, EPR and magnetization measurements we show that these compounds are close to a metal-insulator transition where a scenario analogous to the one of A_xC_{60} can develop.

TUE3F4.4 15:40

Interfacial phenomena and microstructural arrangement in superconducting Sr_2RuO_4-$Sr_3Ru_2O_7$ eutectic crystals — •Antonio Vecchione[1], Rosalba Fittipaldi[1], Mario Cuoco[1], Regina Ciancio[1], Daniela Stornaiuolo[2], Detlef Born[2], Francesco Tafuri[2], Eva Olsson[3], Shunichiro Kittaka[4], Yoshiteru Maeno[4], and Sandro Pace[1] — [1]CNR-INFM Laboratorio Regionale SuperMat and Universita' di Salerno Dipartimento di Fisica,

Aula 6

TUE3F6.2 15:20

Second Sound Influence on Heat Processes in the Superfluid 3He -4He Mixtures at Low Temperatures — Konstantyn Nemchenko and •Svetlana Rogova — Energy Physics Department, Karazin Kharkiv National University, Kharkiv , UA-61077, Ukraine

Heat transfer in the superfluid 3He -4He mixtures at low temperatures is considered. Full thermal flow is calculated. Influence of thermodynamic parameters values on second sound mode fraction in thermal flow is studied.

TUE3F6.3 15:40

Transmission and Reflection of Phonons and Rotons at the Superfluid Helium-Solid Interface, and their Contributions to Osmotic Pressure — Igor N. Adamenko[1], Konstantin E. Nemchenko[1], •Igor V. Tanatarov[2], and Adrian F.G. Wyatt[3] — [1]Karazin Kharkov National University, Svobody Sq. 4, Kharkov, 61077, Ukraine — [2]Akhiezer Institute for Theoretical Physics, NSC KIPT, Academicheskaya St. 1, Kharkov, 61108, Ukraine — [3]School of Physics,

Aula Magna

We present an atomistic study about the thermodynamic stability and dynamical evolution of a hybrid gold-protein interface in the presence of explicit liquid water solution, through a fully ab initio Car-Parrinello molecular dynamics simulation.

TUE3M.4 16:00

Vibrational fingerprints of H-bond network formation in aminoacid SAMs — •Valentina De Renzi[1,2], Luca Lavagnino[3], Valdis Corradini[2], Roberto Biagi[1,2], Umberto del Pennino[1,2], and Maurizio Canepa[3] — [1]Dipartimento di Fisica, Università di Modena e Reggio Emilia, Modena, Italy — [2]CNR-INFM Center for nanoStructures and bioSystem at Surfaces, Modena, Italy — [3]CNISM and Dipartimento di Fisica dell'Università di Genova, Genova, Italy

Self-organization of Cysteine/Au(111) is studied by HREELS. A collective vibration of the H-bond network is for the first time observed at very-low frequency, and found sensitive to the details of lateral interaction.

Aula Amaldi

ester, M13 9PL, UK — [3]Center of Physics and Departamento de Física, Universidade do Minho, P-4710-057, Braga, Portugal — [4]Department of Physics, Boston University, 590 Commonwealth Avenue, Boston, MA 02215, USA — [5]Instituto de Ciencia de Materiales de Madrid. CSIC. Cantoblanco. E-28049 Madrid, Spain

It is shown that the band structure of bilayer graphene can be controlled by an electric field so that the gap between the valence and conduction bands can be tuned between zero and mid-infrared energies.

TUE3A.5 16:00

Transient charging phenomena in graphite — •Tatiana Makarova and Tanzina Chowdhury — Umeå University, 90187, Umeå, Sweden

Charge injection and detection experiments were performed on highly oriented pyrolytic graphite using an electrostatic force microscope. Stored charges in the defect regions are detected; charging and discharging processes in the defect regions are described

Aula Conversi

layers of POPE/POPG mixture has been studied by AFM as a function of temperature, ionic strength and pH of the solution. The role of the substrate is elucidated.

TUE3C.4 16:00

mechanical denaturation of single T4 lysozyme molecules: effect of topology on folding pathways — •ciro cecconi[1], Elizabeth A. Shank[2], Susan Marqusee[3], and Carlos Bustamante[4] — [1]Dept. of Physics, University of Modena and Reggio Emilia, Via Campi 213/A 41100 Modena — [2]Dept. of Microbiology and Molecular Genetics, Harvard Medical School, MA 02115 — [3]Dept. of Molecular and Cell Biology, University of California Berkeley, CA 94720-3206. — [4]Dept. of Physics, University of California Berkeley, CA 94720-3206. E-mail: carlosjbustamante@gmail.com

We studied unfolding and refolding trajectories of several different mutants of T4 lysozyme (T4L), one molecule at a time, using laser tweezers. We found a strong correlation between protein*s topology and protein*s folding pathways.

Aula 1

TUE3F1.3 16:00

Composition of Leonardo da Vinci's sfumato in the Joconda and the Lady with ermine — •Elias Mady[1,2] and Cotte Pascal[3] — [1]Institut des NanoSciences de Paris, Université Pierre et Marie Curie, Unité Mixte de Recherche CNRS n° 7588, 140 rue de Lourmel, 75 015 Paris, France — [2]Université d*Evry Val d'Essonne, boulevard François Mitterrand, 91000 Evry, France — [3]Lumiere Technology S.A.S., 215 bis Boulevard St Germain, 75 006 Paris, France

The association of a multi-spectral camera and of the modeling using the radiative transfer equation underlines a glaze technique and the pigment composition of both layers used by Leonardo to paint Monna Lisa'face.

Tuesday

Rettorato

16:30 – 18:40

Magnetism - Poster Session

TUEp.MAG.1 16:30

Diamagnetic substitution- induced enhancement of the magnetization in $Bi_{1-x}A_xFeO_3$ (A= Ca, Sr, Pb, Ba) multiferroics — •Vladimir Khomchenko[1], Michal Kopcewicz[2], Yuriy Pogorelov[3], Joao Pedro Araujo[3], Joaquim Manuel Vieira[1], and Andrei Kholkin[1] — [1]Department of Ceramics and Glass Engineering, University of Aveiro, 3810-193 Aveiro, Portugal — [2]Institute of Electronic Materials Technology, Wolczynska street 133, 01-919 Warsaw, Poland — [3]Department of Physics, University of Porto, Rua Campo Alegre 687, 4169-007 Porto, Portugal

The crystal structure, dielectric, magnetic and local ferroelectric properties of $Bi_{1-x}A_xFeO_3$ (A= Ca, Sr, Pb, Ba) multiferroics were investigated. Correlation between the ionic radius of the substituting element and the magnetic properties was found.

TUEp.MAG.2 16:30

Magnetism and thermodynamics of low dimensional spin-1/2 Heisenberg ferromagnets in a magnetic field — •Tatiana Antsygina, Marina Poltavskaya, Igor Poltavsky, and Konstantin Chishko — B. Verkin Institute for Low Temperature Physics and Engineering

Thermodynamic and magnetic properties of one- and two-dimensional (on square and triangular lattices) spin-1/2 Heisenberg ferromagnets in magnetic field are investigated within second-order two-time Green function formalism. The temperature dependences of thermodynamic functions are calculated.

TUEp.MAG.3 16:30

Spin-glass phase in a regular random network — Anna Mańka and •Krzysztof Kułakowski — AGH University of Science and Technology, al. Mickiewicza 30, PL-30059 Kraków, Poland

Ising spis are placed at nodes of a random network. The degree of all nodes is exactly three. The spin-spin interaction is antiferromagnetic. The transition temperature is found to decrease with the clustering coefficient.

TUEp.MAG.4 16:30

Vector Magnetometer in Studies of Thermoremanent Magnetization Processes of Samples of Randomly Oriented Magnetic Nanoparticles — •Alexander Bazhan — P.L.Kapitza Institute for Physical Problems, RAS, ul. Kosygina 2, 119334 Moscow, Russia

Possibilities of vector magnetometer, which can investigate three perpendicular components of samples magnetic moments in studies of, determined by magnetic relaxation, magnetization and thermoremanent magnetization processes in samples of randomly oriented magnetic nonoparticles, are discussed.

Aula 3

in presence of correlation effects. Results at the $L_{2,3}$ edges of bulk transition metals and selected molecular compounds will be discussed.

TUE3F3.4 16:00

Atomic structure and electronic properties of realistic Fe/ZnSe(001) interfaces from first principles — •Massimiliano Marangolo and Fabio Finocchi — Institut des NanoSciences de Paris (INSP), Paris, France

We study several models for Fe/ZnSe(001) within DFT and analyze the DOS and spin polarization. Most stable interfaces contain mixed Zn-Fe layers in contact with Se-terminated ZnSe(001) and explain XPS data and the measured low TMR.

Aula 4

IT-84081 Baronissi (Sa), Italy — [2]CNR-INFM Coherentia and Dipartimento di Scienze Fisiche , Universita' di Napoli Federico II, Napoli, Italy — [3]Microscopy and Microanalysis, Department of Applied Physics, Chalmers University of Technology, Goteborg, Sweden — [4]Department of Physics, Kyoto University, Kyoto 606-8502, Japan

Sr_2RuO_4-$Sr_3Ru_2O_7$ eutectic crystals superconductivity has been studied at the interface between the two phases and in a $Sr_3Ru_2O_7$ domain cut from the eutectic. Our study outlines the relationship between crystals structure and superconductivity.

TUE3F4.5 16:00

Dynamics of Weyl quasiparticles in the presence of quantum noise — •Giuseppe Falci — MATIS-INFM, Unita' di Catania — Dipartimento di Metodologie Fisiche e Chimiche (DMFCI),Università di Catania

Effects of quantum noise on the dynamics of quasiparticles in graphene ar studied by an exct mapping to a conditional spin-boson model. Non-secular effects strongly affect the spin dynamics close to the Dirac points.

Aula 6

University of Exeter, Exeter EX4 4QL, UK

The contribution has been withdrawn by the authors.

TUE3F6.4 16:00

Direct observation of Anderson localization in atomic Bose-Einstein condensates — Juliette Billy, Vincent Josse, Zhanchun Zuo, Alain Bernard, Ben Hambrecht, Pierre Lugan, David Clément, •Laurent Sanchez-Palencia, Philippe Bouyer, and Alain Aspect — Laboratoire Charles Fabry de l'Institut d'Optique, CNRS and Univ. Paris-Sud, Campus Polytechnique, RD 128, F-91127 Palaiseau cedex, France

We report the experimental observation of Anderson localization of a matterwave using an atomic Bose-Einstein condensate. This result shows the potential of ultracold atoms to address basic questions of condensed matter in controllable potentials.

Tuesday

Rettorato

TUEp.MAG.5 16:30

Ultrafastphotoswitching Dynamics Of-bistable Spin-Crossover Molecules In The Solid State — •Nicolas Moisan, Johan Hébert, Maciej Lorenc, Marina Servol, Marylise Buron, Eric Collet, and Hervé Cailleau — Institute of Physics of Rennes UMR CNRS University Rennes1, campus Beaulieu, Rennes 35042 France

Here we present solid state light induced spin crossover studied by ultra-fast optical and X-ray pump-probe experiments. We thereby observe the dynamics on a broad range of time scales, from picosecond to millisecond.

TUEp.MAG.6 16:30

Influence of Helical Magnetic Structure on Magnetoimpedance Effect in Co-rich amorphous Microwires — •Alexander Chizhik[1], Arcady Zhukov[1], Juan Mari Blanco[2], and Julian Gonzalez[1] — [1]Dpto. Fisica de Materiales, Universidad del País Vasco, 1072, 20080 San Sebastian, Spain — [2]Departamento Física Aplicada I, Universidad del Pais Vasco, Plaza Europa, 1, 20018 San Sebastián, Spain

Correlation between helical magnetic structure and magnetoimpedance effect has been studied in Co-rich amorphous microwires using magneto-optical Kerr effect. Direct relation between angle of helical anisotropy and value of torsion stress has been established.

TUEp.MAG.7 16:30

High degrees of polycrystallization and magnetism in Ni3N thin layers — David Vempaire[1], •Farid Fettar[1], Luc Ortega[1], Andre Sulpice[1], Jacques Pelletier[2], François Pierre[3], El Kebir Hlil[1], and Daniel Fruchart[1] — [1]Institut NEEL, CNRS & Université Joseph Fourier BP166 F-38042 Grenoble Cedex 9, France — [2]Centre de Recherche Plasmas-Matériaux-Nanostructures, LPSC, 38026 Grenoble Cedex, France — [3]CEA-LETI, MINATEC, 17 rue des Martyrs, 38054 Grenoble Cedex 09, France

A mixing of (Ni2N, Ni3N) and only Ni3N are stabilized in thin layers for high and low N2 partial pressure respectively. An optimization of the crystallization and magnetism in Ni3N is obtained for intermediate p(N2)

TUEp.MAG.8 16:30

Spin and Orbital Order in the Two-Orbital Hubbard Model at Quarter Filling — •Katsunori Kubo — Max Planck Institute for Chemical Physics of Solids, 01187 Dresden, Germany — Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Ibaraki 319-1195, Japan

We study the two-orbital Hubbard model by using a variational Monte Carlo method at quarter filling. Then, we find that only the paramagnetic state and the ferromagnetic antiferro-orbital state can become the ground state.

TUEp.MAG.9 16:30

Synthesis and Characterization of CoxNi1-xFe2O4 nanoparticles — •Giovanni Attolini[1], Gerson Marquez[2], Edgar Pérez[2], Fulvio Bolzoni[1], and Vicente Sagredo[2] — [1]IMEM-CNR Institute Parco Area delle Scienze 37A, 43010 Parma (Italy) — [2]Lab. de Magnetismo, Fac. de Ciencias, Universidad de Los Andes, Mérida. Venezuela

Nanosized CoxNi1-xFe2O4 (40-50 nm) were prepared by co-precipitation method using the metal nitrates as precursors. The nanoparticles were characterized by using TEM microscopy; X-ray diffraction, magnetization measurements as a function of temperature and magnetic field.

TUEp.MAG.10 16:30

Antisymmetric Exchange in Antiferromagnetic Materials of Rhombohedral Structures — •Alexander Bazhan — P.L.Kapitza Institute for Physical Problems, RAS, ul. Kosygina 2, 119334 Moscow, Russia

Depending on spin-orbit interaction, electrons, holes transferrings between energy levels of interacting magnetic ions, determined by rhombohedral oxygen crystal fields and their particularities in antiferromagnets, are discussing for antisymmetric, Dzyaloshinskii-Moria exchange identification, using Hubbard Hamiltonians.

TUEp.MAG.11 16:30

Hysteresis phenomena, dynamic susceptibility, giant magnetoresistance and cluster spin glass states in the selected spinels and manganites — •Jerzy Warczewski, Józef Krok-Kowalski, Paweł Gusin, Grzegorz Urban, Grzegorz Władarz, and Paweł Rduch — University of Silesia, Institute of Physics, ul. Uniwersytecka 4, PL-40-007 Katowice, Poland

The phenomena are related to frustration of magnetic moments, magnetocrystalline and exchange anisotropy as well as to reconstruction of AFM and FM clusters caused by the external magnetic field and accompanied by the charge tunneling.

TUEp.MAG.12 16:30

Exchange bias in Co layers deposited on Si-O substrates — •Farid Fettar[1,2], Aline Ramos[1], Houmed Garad[1], Luc Ortega[1], Michael Pashkevich[3], Alex Stognij[3], Nickolaj Novitskii[3], Vladimir Pankov[4], Julian Geshev[2,5], and Maria Dolors Baro[2] — [1]Institut NEEL, CNRS & Université Joseph Fourier BP166 F-38042 Grenoble Cedex 9, France — [2]Departament de Física, Universitat Autònoma de Barcelona, 08193 Bellatera, Spain — [3]Scientific-Practical Materials Research Centre of NAS of Belarus, 19 P. Brovki Street, Minsk, 220072, Belarus — [4]Belarusian State University, 4, Nezavisimosti Avenue, Minsk, 220030, Belarus — [5]Instituto de Física, Universidade Federal do Rio Grande do Sul, 91501-970 Porto Alegre, RS, Brazil

Magnetic measurements (at different temperatures, Co thickness, magnetic field and history, i.e., ZFC/FC procedures), showed that exchange-biased CoO structure is obtained by sputtering of a Co layer onto Si substrates where O was initially deposited.

TUEp.MAG.13 16:30

Ferromagnetic behaviour at RT of a 6 Å thick Co layer deposited on Si/SiO2 — •Houmed Garad[1], Farid Fettar[1,2], Luc Ortega[1], Aline Ramos[1], Michael Pashkevich[3], Alex Stognij[3], Nickolaj Novitskii[3], Vladimir Pankov[4], Julian Geshev[2,5], and Maria Dolors Baro[2] — [1]Institut NEEL, CNRS & Université Joseph Fourier BP166 F-38042 Grenoble Cedex 9, France — [2]Departament de Física, Universitat Autònoma de Barcelona, 08193 Bellatera, Spain — [3]Scientific-Practical Materials Research Centre of NAS of Belarus, 19 P. Brovki Street, Minsk, 220072, Belarus — [4]Belarusian State University, 4 Nezavisimosti Avenue, Minsk, 220030, Belarus — [5]Instituto de Física, Universidade Federal do Rio Grande do Sul, 91501-970 Porto Alegre, RS, Brazil

A few angstroms thick Co layer deposited onto SiO2 by ion beam sputtering presents a ferromagnetic behaviour at room temperature, differently from results published in the literature concerning low-thickness Co layers deposited on oxides

TUEp.MAG.14 16:30

Method and Experimental Stand for Testing a Magnetoresistive — •Dorin Luca[1], Mihail Liviu Craus[2], Mihai Lozovan[2], Carmen Mita[3], Nicoleta Cornei[3], and Nicanor Cimpoesu[1] — [1]Gh. Asachi Technical University, 67 Bd. D. Mangeron, RO-700050 Iasi, Romania — [2]National Institute for Research and Development for Technical Physics, 47 Bd. D. Mangeron, RO-700050 Iasi, Romania — [3]Al.I. Cuza University, 11 Bd. Carol I, RO-700506 Iasi, Romania

We present a method and a test stand for the magnetoresistive sensors. The sensors, based on GMR properties of La0.54Sm0.11Sr0.35Mn1-xCuxO3 thin film, have a good response in the -50 to +50 C temperature range.

TUEp.MAG.15 16:30

Anisotropic reinforcement of nanocomposites tuned by magnetic orientation of the filler network — •Jacques Jestin[1], Fabrice Cousin[1], Isabelle Dubois[1], Christine Ménager[2], Ralph Schweins[3], Julian Oberdisse[4], and François Boué[1] — [1]Laboratoire Léon Brillouin (LLB), CEA/CNRS, CEA Saclay 91191 Gif/Yvette France — [2]Laboratoire Liquides Ioniques et Interfaces Chargées (LI2C), UMR 7612 CNRS / Université Paris 6, 4, place Jussieu - case 63 75252 Paris cedex 05 France — [3]Institut Laue-Langevin, DS/LSS, 6 rue Jules Horowitz, B.P. 156, 38042 Grenoble Cedex 9 France — [4]Laboratoire des Colloïdes, Verres et Nanomatériaux (LCVN), cc 26 UMR 5587 Université Montpellier II, 34095 Montpellier Cedex 05 France

We present an innovative nanocomposite in which anisotropic mechanical reinforcement can be tuned by application of an external magnetic field resulting from the local orientation of the filler network probed with neutron scattering (SANS) measurements.

TUEp.MAG.16 16:30

Temperature spin dynamics in the molecular antiferromagnetic ring Cr7Ni from 1H NMR — Jorge Lago[1], Alessandro Lascialfari[1,2], Ferdinando Borsa[1], Edoardo Micotti[1], Maurizio Corti[1], •Paolo Arosio[2], Francesco Orsini[2], Alberto Bianchi[3], Stefano Carretta[3], Paolo Santini[3], Grigore Timco[4], and Richard Winpenny[4] — [1]Department of Physics "Volta", Unità INFM di Pavia, Via Bassi 6, I2 7100, Pavia, Italy and S3-CNR-INFM, Modena, Italy — [2]"Giovanni Esposito" Institute of General Physiology and Biological Chemistry, University of Milan, Via Trentacoste 2, I20134, Italy. — [3]Department of Chemistry, University of Parma, I43100 Parma, Italy — [4]School of Chemistry, University of Manchester, Oxford Road Manchester, M13 9PL, UK

Spin dynamics in Cr7Ni ring using nuclear spin-lattice relaxation rate have been studied. Investigations in the temperature range around J value have been performed as a function of the temperature at different applied magnetic field.

TUEp.MAG.17 16:30

Investigation of metallic/oxide interfaces in Pt/Co/AlOx trilayers by hard X-Ray Reflectivity — •Houmed Garad[1], Farid Fettar[1,2], Aline Ramos[1], Luc Ortega[1], Aurelien Manchon[3], Stéphane Auffret[3], Bernard Rodmacq[3], and Bernard Dieny[3] — [1]Institut NEEL, CNRS & Université Joseph Fourier BP166 F-38042 Grenoble Cedex 9, France — [2]Departament de Física, Universitat Autònoma de Barcelona, 08193 Bellatera, Spain — [3]Inac/Spintec, URA 2512 CEA/CNRS, CEA/Grenoble, 38054 Grenoble Cedex 9, Franc

By estimating the roughness, thickness and density of layers in Pt/Co/AlOx with different oxidation times (tOx), (deduced from reflectivity measurements fits), we evaluate for which tOx the oxygen atoms reach the interfaces

TUEp.MAG.18 16:30

Magnetic properties of hydrogen plasma treated fullerene films — Tatiana Makarova[1], Irina Zakharova[3], Oleg Kvyatkovskii[2], Sergei Buga[4], Aleksandr Volkov[4], and •Andrei Shelankov[1] — [1]Umeå University, 90187, Umeå, Sweden — [2]Ioffe Physico-Technical Institute, 26 Polytechnicheskaya, St Petersburg 194021, Russia — [3]State Polytechnical University, St Petersburg, Russia — [4]Technological Institute for Superhard and Novel Carbon Materials, 142190 Troitsk, Moscow Region, Russia

Photopolymerization of fullerene films treated by hydrogen plasma creates a metastable magnetically ordered phase. Under structural relaxation the magnetic phase transforms to a diamagnetic mixture of C60 molecules, C60=C60 chains and singly bonded H-C60-C60-H dimers.

TUEp.MAG.19 16:30

Disagreement for discrimination in physics in the 21 century — Ryszard Radwanski and •Zofia Ropka — Center of Solid State Physics, Snt Filip 5, 31-150 Krakow, Poland

We inform the scientific community about ongoing discrimination of the localized crystal-field-based understandings of magnetism and electronic structure of transition-metal 3d/4f/5f compounds, in particular in compounds exhibiting heavy-fermion phenomena and Mott insulators.

TUEp.MAG.20 16:30

Magnetic properties of DyFe3(BO3)4 — •Popova Elena[1], Tristan Natalia[2], Vasiliev Alexandr[1], Temerov Vladimir[3], Bezmaternykh Leonard[3], Leps Norman[2], Büchner Berndt[2], and Klingeler Ruediger[2] — [1]Low Temperature Physics Department, Moscow State University, 119991 Moscow, Russia — [2]Leibniz Institute for Solid State and Materials Research, IFW Dresden, 01171 Dresden, Germany — [3]L.V. Kirensky Institute of Physics, Siberian Branch of RAS, Krasnoyarsk, 660036, Russia

The antiferromagnetic ordering of DyFe3(BO3)4 occurs at 38K in the Fe-subsystem. The Dy-subsystem remains initially paramagnetic. External magnetic fields lead to spin-flop transitions in the iron subsystem as well as to superposed magnetization in the Dy subsystem.

TUEp.MAG.21 16:30

Thermal diffusion of Co into ZnO probed by high energy X-ray photoelectron spectroscopy — •Jacques Dumont[1], Mac Mugumaoderha Cubaka[1], Jacques Ghijsen[1], Wolfgang Drube[2], and Robert Sporken[1] — [1]University of Namur, Department of Physics, 61 rue de Bruxelles, B-5000, Namur, Belgium — [2]Hasylab am Desy, Notkestrasse 85, D-22603, Germany

The formation of a thin (Zn,Co)O film by thermal diffusion of Co into ZnO was evidenced by Hard X-ray photoelectron spectroscopy.

TUEp.MAG.22 16:30

Magnetic Polaritons in Metamagnet Layered Structures — •Paulo Mauriz[1], Manoel Vasconcelos[1], Carlos Araujo[2], and Eudenilson Albuquerque[2] — [1]Departamento de Ciencias Exatas, CEFET-MA, Brazil — [2]Departamento de Fisica, UFRN, Brazil

Magnetic polariton propagation in layered structures, made up by the stacking of a metamagnetic and a non-magnetic insulator layers, is theoretically studied by using a transfer matrix approach, considering all phases of the metamagnetic material.

TUEp.MAG.23 16:30

Focused Ion Beam fabrication and magneto-optical characterization of interacting, single crystal, Fe nanomagnets on MgO(001) — •Alessandro di Bona[1], Luca Sighinolfi[2], Gian Carlo Gazzadi[1], and Sergio Valeri[1,2] — [1]CNR-INFM, Centro di Ricerca S3, via Campi 213/A, 41100 Modena, Italia — [2]Università di Modena e Reggio Emilia, Dipartimento di Fisica, via Campi 213/A, 41100 Modena, Italia

We report on growth-induced, magnetic anisotropy of single crystal Fe films grown on MgO(001) and its dependence on deposition conditions and coupling-induced magnetic anisotropy in arrays of square nanomagnets fabricated by Focused Ion Beam.

TUEp.MAG.24 16:30

Effect of lanthanide cations on the structural, magnetic and transport properties of Cu doped manganites — •Carmen Mita[1], Mihail-Liviu Craus[2,3], Nicoleta Cornei[1], and Mihai Lozovan[2] — [1]Chemistry Faculty of Al.I.Cuza University, 11 Carol I Bvd, Iasi, 700506 Romania — [2].National Institute of Research and Development for Technical Physics, 47, D. Mangeron Bvd., Iasi, 700050 Romania — [3]Joint Institute for Nuclear Research-Laboratory of Neutron Physics, Dubna, Joliot-Curie 6, 141980 Dubna, Region Moskva, Russia

La0.54(Ho,Sm)0.11Sr0.35Mn1-xCuxO3 were obtained by sol-gel method. The samples were characterized by the X-ray diffraction (XRD), spectrophotometric methods (UV-VIS, FT-IR). Magnetic and transport measurements were performed in view to study the ferromagnetic-paramagnetic and metal-insulator transition.

TUEp.MAG.25 16:30

Iron influence on magnetic/crystalline structure and transport properties of La0.54Ho0.11Sr0.35Mn1-xFexO3 — Nicoleta Cornei[1], Mihail-Liviu Craus[2,3], •Carmen Mita[1], Mihai Lozovan[2], and Maria Balasoiu[3] — [1]Al.I.Cuza University, 11, Iasi, Carol I Bvd., 700050 Iasi, Romania — [2]National Institute of Research and Development for Technical Physics, 47, D. Mangeron Bvd. 700050 Iasi, Romania — [3]Joint Institute for Nuclear Research, Joliot-Curie 6,141980 Dubna, Russia

Structure of La0.54Ho0.11Sr0.35Mn1-xFexO3 manganites, prepared by sol-gel method, were investigated by XRD analysis. From magnetic and electric data we observed a decrease of the Curie and transition temperature with increase of Fe concentration.

TUEp.MAG.26 16:30

Cr segregation at Fe Σ5(210) and Σ3(111) grain boundaries — •Elwira Wachowicz and Adam Kiejna — Institute of Experimental Physics, University of Wrocław, Wrocław, Poland

The effect of Cr impurities on cohesive and magnetic properties of Fe Σ5(210) and Σ3(111) grain boundaries is studied from first principles. Different concentration and position of impurity atoms are considered.

TUEp.MAG.27 16:30

Transport mechanisms in La0.54Ho0.11Ca0.35MnO3 manganites doped with Co — •Mihail-Liviu Craus[1,2], Nicoleta Cornei[3], Mihai Lozovan[1], Aleksandr Ivankov[2], and Ahmed Islamov[2] — [1]National Institute of Research and Development for Technical Physics, 47 D. Mangeron Blvd., 700050 Iasi,Romania — [2]Joint Institute for Nuclear Research, Joliot-Curie 6, 141980 Dubna, Russia — [3]Al.I.Cuza University, Bd. Carol I 11, 700050 Iasi, Romania

La0.54Ho0.11Ca0.35CoxMn1-xO3 manganites were synthesized and treated at 1200*C. A good correlation was established between the microstructure parameters, on a side, and magnetic structure and transport characteristics, on other. Transport mechanisms above Curie temperature were investigated.

TUEp.MAG.28 16:30

Thermal Expansion and Magnetism of UCoAl and UNiAl — •Vladimir Sechovsky and Jan Prokleska — Charles University, Prague, Czech Republic

Common features in the anomalous thermal expansion of UNiAl (antiferromagnet) and UCoAl (itinerant 5f-electron metamagnet) measured in magnetic fields up to 14 T are reported. Effect of anisotropic magnetic correlations in paramagnetic state is discussed.

TUEp.MAG.29 16:30

Spatiotemporal chaos in sine Gordon systems subjected to wave fields: Onset and suppression — Ricardo Chacón[1], Alberto Bellorín[2], •Luis Emilio Guerrero[3], and Jorge Alberto González[4] — [1]Departamento de Electrónica e Ingeniería Electromecánica, Escuela de Ingenierías Industriales, Universidad de Extremadura, Apartado Postal 382, E-06071 Badajoz, Spain — [2]Escuela de Física, Facultad de Ciencias, Universidad Central de Venezuela, Apartado 47586, Caracas 1041-A, Venezuela — [3]Departamento de Física, Universidad Simón Bolívar, Apartado 89000, Caracas 1080-A, Venezuela — [4]Centro de Física, Instituto Venezolano de Investigaciones Científicas, Apartado 21827, Caracas 1020-A, Venezuela

The onset of spatiotemporal chaos in a damped sine-Gordon system subjected to a plane wave field as well as its suppression by an additional small-amplitude plane wave field are proposed theoretically and confirmed numerically.

TUEp.MAG.30 16:30

Four tilted easy axis L10-CoPt(111)/Pt(111)/MgO(100) PLD films for high density perpendicular recording — •Gaspare Varvaro[1], Elisabetta Agostinelli[1], Sara Laureti[1], Alberto Maria Testa[1], Dino Fiorani[1], Amanda Generosi[2], Barbara Paci[2], and Valerio Rossi Albertini[2] — [1]ISM-CNR, Research Area Roma1, 00016 Monterotondo Scalo (RM), Italy — [2]ISM-CNR, Research Area Roma2, 00100 Roma, Italy

The study of magnetic and structural properties of (111) L10 CoxPt1-x films deposited by PLD, is discussed. The system showed an unusual easy axes geometry which gave origin to interesting magnetic anisotropy properties.

TUEp.MAG.31 16:30

Hybrid functionals applied to Mn doped III-V semiconductors — •Alessandro Stroppa — Faculty of Physics, University of Vienna, and Center for Computational Materials Science, Sensengasse 8/12, A-1090 Vienna, Austria

We have studied the electronic structure of Mn-doped III-V dilute semiconductor by using hybrid functionals. In particular, it is shown that they can correctly describe the electronic configuration of the Mn ion in GaN.

TUEp.MAG.32 16:30

Engineering the magnetic structure of Fe clusters by Mn alloying — •Roberto Longo[1], Manuel Alemany[1], Andres Vega[2], Jaime Ferrer[3], and Luis Gallego[1] — [1]Departamento de Física de la Materia Condensada, Facultad de Física, Universidad de Santiago de Compostela, E-15782 Santiago de Compostela, Spain — [2]Departamento de Fisica Teorica, Atomica y Optica, Universidad de Valladolid,

Rettorato

E-47011 Valladolid, Spain — [3]Departamento de Fisica, Universidad de Oviedo, E-33007, Oviedo, Spain

We propose to tailor the magnetic structure of atomic clusters by suitable doping, that produces the nanometric equivalent to alloying.

TUEp.MAG.33 16:30

Small angle neutron scattering study of magnetic clustering in (Pr0.55Ca0.45)(Mn1-yCry)O3 manganites — Carlo Castellano[1], •Maurizio Ferretti[1,2], Alberto Martinelli[1], Maria Roberta Cimberle[3], and Claudia Mondelli[4] — [1]LAMIA-INFM-CNR, Corso Perrone 24, 16152 Genova, Italy — [2]Dipartimento di Chimica e Chimica Industriale, Universita' di Genova, Via Dodecaneso 31, 16146 Genova, Italy — [3]Istituto IMEM-CNR sezione di Genova c/o Dipartimento di Fisica, Via Dodecaneso 33, 16146 Genova, Italy — [4]INFM-OGG, Institute Laue - Langevin, 6 rue Jules Horowitz, 38042 Grenoble Cedex 9, France

We report a magnetic clustering development study in Cr-substituted (Pr0.55Ca0.45)(Mn1-yCry)O3 (y = 0.00-0.06) manganites, analysing the q dependence of the SANS intensity on temperature and applied magnetic field just above and below the magnetic transitions

TUEp.MAG.34 16:30

Effect of Cr-substitution on the structural and magnetic properties of (Ho0.50Ca0.50)MnO3 — •Alberto Martinelli[1], Maurizio Ferretti[1,2], Carlo Castellano[1], Maria Roberta Cimberle[3], Roberto Masini[3], and Claudia Mondelli[4] — [1]Laboratorio Materiali Artificiali e Innovativi, Istituto Nazionale per la Fisica della Materia, Consiglio Nazionale delle Ricerche, Corso Perrone 24, Genova, Italy — [2]Dipartimento di Chimica e Chimica Industriale, Universita' di Genova, Via Dodecaneso 31, 16146 Genova, Italy — [3]IIstituto Materiali per Elettronica e Mangetismo, Consiglio Nazionale delle Ricerche, Via Dodecaneso 33, Genova, Italy — [4]C-Lab Institut Laue-Langevin & Istituto Nazionale per la Fisica della Materia, Consiglio Nazionale delle Ricerche, 6 rue Horowitz, 38042 Grenoble Cedex 9, France

We report a neutron powder diffraction study concerning the effect of Cr substitution on the structural and magnetic properties of (Ho0.50Ca0.50)MnO3 between 10 and 300 K

TUEp.MAG.35 16:30

Asymmetric switching characterization of nanostructured magnetic interacting systems — •Radu Tanasa and Alexandru Stancu — Alexandru Ioan Cuza University, Faculty of Physics, 11 Blvd. Carol I, 700506 Iasi, Romania

In a system of strongly interacting magnetic nanoparticles the switching properties of every element experience a major transformation compared with the macroscopic hysteresis loop. Due to interactions, the local hysteresis loops become asymmetric.

TUEp.MAG.36 16:30

Magnetic point-contact precession frequency vs magnetic field angle - The prospect for spin torque oscillator operation at 94 GHz — •Stefano Bonetti[1], Fred Mancoff[2], and Johan Åkerman[1] — [1]Department of Microelectronics and Applied Physics, Royal Institute of Technology, Electrum 229, 16440 Stockholm-Kista, Sweden — [2]Technology Solutions Organization, Freescale Semiconductor Inc, Chandler, Arizona 85224, USA

The precession frequency of a spin torque oscillator as a function of the applied magnetic field angle is measured, and extrapolation predicts frequencies as high as 94 GHz can be reached for in-plane fields.

TUEp.MAG.37 16:30

Magnetic interactions between Co and Fe layers in Co/MgO/Fe trilayer systems studied by XMCD-PEEM — •Jan Vogel[1], Coriolan Tiusan[2], Rachid Belkhou[3,4], Nicolas Rougemaille[1], and Alain Schuhl[5] — [1]Institut Néel, CNRS and UJF, B.P. 166, 38043 Grenoble, France — [2]LPM, UMR CNRS 7556, Nancy Université, Boulevard des Aiguillettes, B.P. 239, 54506 Vandoeuvre-lès-Nancy Cedex, France — [3]Synchrotron SOLEIL, L'Orme des Merisiers Saint-Aubin, 91192 Gif-sur-Yvette, France — [4]Sincrotrone ELETTRA, AREA Science Park, 34012 Basovizza, Trieste, Italy — [5]Laboratoire SPINTEC, URA 2512, 38054 Grenoble, France

We used XMCD-PEEM to separately image magnetic domain structures in the Fe and Co layers of technologically important Fe/MgO/Co systems. Details are obtained on the thickness dependent magnetic coupling in trilayer systems with MgO.

Physics Department

Tuesday

16:30 – 18:40

Poster Session - Methods for Cultural Heritage and Vacuum Science

TUEp.CUL.1 16:30

Optical Coherence Tomography (OCT): a tool for imaging and spectroscopy on works of art — •Gaël Latour[1], Julien Moreau[2], Mady Elias[1], and Jean Marc Frigerio[1] — [1]Institut des Nanosciences de Paris, Paris, France — [2]Laboratoire Charles Fabry, Palaiseau, France

Optical Coherence Tomography (OCT) is a non-invasive and non-destructive technique which is very promising to analyse works of art. Three-dimensional imaging is realised but it is also possible to obtain spectral information from studied materials.

TUEp.CUL.2 16:30

The nanolime in Cultural Heritage conservation; treatment effectiveness on different natural lithotypes. — •Giuliana Taglieri — Department of Chemistry, Chemical Engineering and Materials, University of L'Aquila, Monteluco di Roio, I-67040 L'Aquila, Italy

In this work a nanolime, to be used in Cultural Heritage conservation, is produced and characterised in order to evaluate its carbonatation process. The obtained nanoparticles are applied on natural lithotypes(Poggio Picenze,Travertino and Basalto)

TUEp.CUL.3 16:30

Effect of firing on the structural properties of archaeological ceramics investigated by NMR T1-T2 correlation — Cinzia Casieri[1,2], Francesco De Luca[1,3], and •Camilla Terenzi[1,3] — [1]Research Center SOFT-INFM-CNR, Università 'Sapienza', P.le Aldo Moro 2, I-00185 Roma, Italy — [2]Dipartimento di Fisica, Università di L'Aquila, V. Vetoio 10, I-67010 Coppito, L'Aquila, Italy — [3]Dipartimento di Fisica, Università 'Sapienza', P.le Aldo Moro 2, I-00185 Roma, Italy

T1-T2 correlation maps obtained by low resolution single-sided NMR may constitute an innovative fingerprinting tool for non-destructive ancient ceramic characterization, providing a marker of compositional and porosimetric properties induced by firing.

TUEp.CUL.4 16:30

Acoustical analysis of the big bell Tuba Dei as a tool for investigating its origin — •Krzysztof R. Przegietka — Institute of Physics, Nicolaus Copernicus University, ul. Grudziadzka 5, 87-100 Torun, Poland

The acoustic analysis of one of the biggest gothic bells in Europe - "Tuba Dei" from Torun's cathedral in Poland is given and conclusions about probable origin of the bell and its master are presented.

TUEp.CUL.5 16:30

Felt-tip Pen Inks for Art Design: Investigations by Vibrational Spectroscopies — •Maria Elena Darecchio[1], Giovanni Mori[1], Marco Giannetto[1], Elisa Campani[1], Antonella Casoli[1], Danilo Bersani[2], Pier Paolo Lottici[2], Gloria Bianchino[3], Simona Riva[3], Gianni Antonioli[2], and Remo Reverberi[2] — [1]Dipartimento di Chimica, Università di Parma, Italy — [2]Dipartimento di Fisica, Università di Parma, Italy — [3]CSAC, Università di Parma, Italy

Felt-tip pens inks, used in graphics, have been investigated by micro-FT-IR, micro-Raman, colorimetry and SERS. Discriminant analysis has been applied also on aged materials. An application on Sottsass 1960-70's drawings is presented.

TUEp.CUL.6 16:30

Acoustical analysis of the big bell Tuba Dei as a tool for investigating its origin — •Krzysztof R. Przegietka — Institute of Physics, Nicolaus Copernicus University, ul. Grudziadzka 5, 87-100 Torun, Poland

The acoustic analysis of one of the biggest gothic bells in Europe - "Tuba Dei" from Torun*s cathedral in Poland - is given and conclusions about probable origin of the bell and its master are presented.

16:30 – 18:40

Semiconductor Physics - Poster Session

TUEp.SEMI.1 16:30

Methylene Blue-Semiconductor Nanocrystals Hybrid System for Photodynamic and Photochemical Applications — •Aliaksandra Rakovich[1], Tatsiana Rakovich[2], Vincent Kelly[2], Yury P Rakovich[1], and John F Donegan[1] — [1]Semiconductor Photonics Group, School of Physics and Centre for Research on Adaptive Nanostructures and Nanodevices, Trinity College, Dublin, Ireland — [2]RNA Biology Group, School of Biochemistry and Immunology, Trinity College, Dublin, Ireland

We report the development of novel hybrid material with enhanced photochemical properties, based on methylene blue and CdTe nanocrystals, with the aim of exploiting this system for photovoltaic and photodynamic therapy applications.

TUEp.SEMI.2 16:30

Deep Level Parameters From Frequency Resolved Capacitance Spectroscopy (FRCS) Under Pressure — •Ashok Kumar Saxena — I.I.T.,Roorkee(Uttrakhand)India 247-667

The contribution has been withdrawn by the authors.

TUEp.SEMI.3 16:30

Collective elementary excitations of two-dimensional magnetoexcitons in a state of Bose-Einstein Condensation with arbitrary wave vectors — Sveatoslav Moskalenko[1], Michael Liberman[2], and •Evgheni Dumanov[1] — [1]Institute of Applied Physics of the Academy of Sciences of Moldova, Academic Str. 5, Chisinau, MD2028, Republic of Moldova — [2]Department of Physics, Uppsala University, Box 530, SE-751 21, Uppsala, Sweden

The motion equations for the summary operators describing the creation and annihilation of magnetoexcitons as well as the density fluctuations of the electron-hole(e-h) plasma will be derived. They suggest the existence of virtual magneto-exciton-plasmon complexes.

TUEp.SEMI.4 16:30

Plasmon-type excitationsof the two-dimensional electron-hole system in a strong perpendicular magnetic field — Moskalenko Sveatoslav[1], Liberman Michael[2], •Dumanov Evgheni[1], Shmiglyuk Mirchya[1], and Stefan Angela[1] — [1]Institute of Applied Physics of the Academy of Sciences of Moldova, Academic Str. 5, Chisinau, MD2028, Republic of Moldova — [2]Department of Physics, Uppsala University, Box 530, SE-751 21, Uppsala, Sweden

The intra-Landau level excitations of the two-dimensional electron-hole liquid are characterized by two branches of the energy spectrum(optical and acoustical). A perturbation theory in the frame at the Green's function method.

TUEp.SEMI.5 16:30

2nd-order Møller-Plesset perturbation theory applied to extended systems — •Martijn Marsman, Andreas Grüneis, and Georg Kresse — Faculty of Physics, University Vienna, and Center for Computational Materials Science, Sensengasse 8/12, A-1090, Vienna, Austria

We present ab initio calculations at the level of Hartree-Fock + 2nd-order Møller-Plesset perturbation theory, for extended systems, using periodic boundary conditions and a plane wave basis set.

TUEp.SEMI.6 16:30

Diagrammatic Formalism for Few-Electron Systems in a Quantum Dot in a Magnetic Field: Wigner Phase and Broken-Symmetry Spin-Singlet State — •Artak Avetisyan[1], Konstantinos Moulopoulos[2], and Anahit Djotyan[3] — [1]University of Antwerp, Department of Physics, Groenenborgerlaan 171, B-2020 Antwerp — [2]University of Cyprus, Department of Physics, P.O. Box 20537, 1678, Nicosia, Cyprus — [3]Yerevan State University, Department of Physics, A. Manoogian 1, Yerevan-0025, Armenia

We develop a diagrammatic formalism for the evaluation of the ground state energy of a four-electron system in a quantum dot in a magnetic field for Wigner, spin-singlet and broken symmetry spin-singlet states.

TUEp.SEMI.7 16:30

Effect of internal crystal structure of quantum dot (wire)-in-matrix system on Raman scattering spectra — •Anatoliy Yaremko, Volodymyr Dzhagan, and Volodymyr Yukhymchuk — Lashkaryov Institute of Semiconductor Physics, NAS of Ukraine, Kyiv 03028, Ukraine

Raman scattering from quantum dot (wires)-in-matrix system is studied theoretically using the Green function method with taking into account the crystal structure of both the quantum dot and surrounding matrix.

TUEp.SEMI.8 16:30

Quantum Hall Effect in Double Quantum Wells Made of the InAs-Based Heterosystems — •Michael Yakunin[1,2], Sergei Podgornykh[1], Vladimir Neverov[1], Anne de Visser[2], Gianni Galistu[2], and Yurii Sadofyev[3] — [1]Institute of Metal Physics, RAS, Ural Branch, S. Kovalevskaya Str., 18, Ekaterinburg GSP-170, 620041, Russia — [2]Van der Waals - Zeeman Institute, University of Amsterdam, Valckenierstraat 65, 1018 XE Amsterdam, The Netherlands — [3]Department of Electrical Engineering and Center for Solid State Electronic Research, Arizona State University, Tempe, Arizona 25287-5706

Unconventional features are observed in the quantum magnetotransport of double quantum wells (DQWs) made of InGaAs/GaAs and InAs/AlSb heterosystems, which are attributed to a larger bulk g-factor than in traditional GaAs/AlGaAs DQWs

TUEp.SEMI.9 16:30

Electronic Structure and Magnetism of ZnS, ZnO, and Cu2O-based Compounds Doped with 3d Transition Metal Ions — •Tatiana Surkova, Vadim Galakhov, and Ernst Kurmaev — Institite of Metal Physics, Ural Division of the Russian Academy of Sciences, 620041 Ekaterinburg GSP-170, Russia

We show an influence of synthesis conditions on the local structure of impurity atoms of 3d elements and magnetism in semiconducting compounds. For this aim we have used X-ray absorption and X-ray emission spectrosopies.

TUEp.SEMI.10 16:30

Electronic excitations of homologous classes of polycyclic aromatic hydrocarbons for applications in photonics and electronics — •Giancarlo Cappellini[1], Giuliano Malloci[2], and Giacomo Mulas[2] — [1]CNR-SLACS, Dipartimento di Fisica - Universita' di Cagliari, Monserrato (Ca), Italy — [2]INAF - Osservatorio Astronomico di Cagliari, Capoterra (Ca), Italy

We report a systematic study of the electronic structure and the absorption spectra of some oligoacenes, n-phenacenes, and oligorylenes. General trends as a function of molecular size are reported.

TUEp.SEMI.11 16:30

Dynamical behavior of the spin states in a Rashba anisotropic 2D quantum dot — •Masoumeh Sisakhti[1] and Mohamad Mehdi Golshan[2] — [1]Department of Physics, College of Science, Shiraz University ,Shiraz 71454,Iran — [2]Department of Physics, College of Science, Shiraz University ,Shiraz 71454,Iran

We investigate the time evolution of the spin states and the subbands of an electron in a 2D anisotropic Rashba quantum dot,to which a magnetic field is applied.

TUEp.SEMI.12 16:30

Tunable Photonics with Optically Driven Color Centers in Diamonds. — Jin Hui Wu[1], •Giuseppe La Rocca[2], and Maurizio Artoni[3] — [1]Department of Physics, Jilin University, Changchung, China — [2]Scuola Normale Superiore, Pisa, Italy — [3]Department of Chemistry and Physics of Materials, University of Brescia, Italy

Inhomogeneously broadened optical transitions of nitrogen-vacancy centers in diamond may be employed to attain all-optically tunable photonic band-gap structures that can be devised to improve light storage efficiencies in solids quantum memory devices.

TUEp.SEMI.13 16:30

Nanowire iJFET : electronic structure and low-field mobility — •Bart Soree[1] and Wim Magnus[1,2] — [1]IMEC, Kapeldreef 75, B-3001 Leuven, Belgium — [2]Universiteit Antwerpen, Groenenborgerlaan 171, B-2020 Antwerpen, Belgium

We consider a uniformly doped surrounding gate nanowire operated in JFET mode. We perform a self-consistent Poisson-Schroedinger calculation to obtain the electronic structure and calculate the low-field mobility taking into account the relevant scattering mechanisms.

TUEp.SEMI.14 16:30

Spin-Dependent Resonant Tunneling Current via Landau States Bound to Magnetic

Impurities — •Pinchas Dahan — School of Engineering at Ruppin Academic Center Emek-Hefer 40250, Israel

We propose a theoretical model for spin-dependent resonant tunneling current via Landau states bound to magnetic impurities in a quantum well. These states are spin selective and, using bias voltage, exhibit various spin-dependent transport phenomena.

TUEp.SEMI.15 16:30

Ultrafast nonlinear absorption and optical Kerr effect in chalcogenide glasses — •Ivan Blonskyy[1], Viktor Kadan[1], Oleh Shpotyuk[2], Ihor Pavlov[1], and Mihail Iovu[3] — [1]Dept. of Photonic Processes, Institute of Physics NAS of Ukraine, 46 Prospekt Nauky, Kyiv, 03028, Ukraine — [2]Scientific Research Company "Carat", 202, Stryiska Str., Lviv, 79031, Ukraine — [3]Institute of Applied Physics AS of Moldova, Str. Academiei, 1, MD-2028 Chisinau, Moldova

Ultrafast nonlinear absorption for intra- and interband excitation and optical Kerr effect was measured in bulk chalcogenide glasses. Physical mechanisms of the absorbance dependence on mutual pump/probe polarization and other observed phenomena are discussed.

TUEp.SEMI.16 16:30

Spectral properties and dynamics of transient absorption induced by filamented femtosecond laser pulses in BK7 glass — Ivan Blonskyy[1], •Viktor Kadan[1], Oleh Shpotyuk[2], and Ihor Pavlov[1] — [1]Dept. of Photonic Processes, Institute of Physics NAS of Ukraine, 46 Prospekt Nauky, Kyiv, 03028, Ukraine — [2]Scientific Research Company "Carat", 202, Stryiska Str., Lviv, 79031, Ukraine.

Time- and spectrally-resolved measurements of absorption induced by femtosecond laser pulses in BK7 glass show that at delays > 300 fs dominant absorption mechanism is governed not by free carriers, but most probably by excitons.

TUEp.SEMI.17 16:30

Electron field emission from porous silicon layers grown by electrochemical etching without application of external voltage — •Mykola Semenenko and Anatoliy Evtukh — V. Lashkaryov Institute of Semiconductor Physics, National Academy of Science of Ukraine, 45, prospect Nauky, 03028 Kyiv, Ukraine

It has been shown methodic of formation of porous silicon by the electrochemical etching without added applied source voltage. The surface morphology of porous silicon was very important for enhancement of electron field emission parameters.

TUEp.SEMI.18 16:30

Catalyst-free Growth of III-V Semiconductor Nanowires by Molecular Beam Epitaxy — Fauzia Jabeen[1,2], Vincenzo Grillo[1], Silvia Rubini[1], and •Faustino Martelli[1] — [1]Laboratorio TASC, INFM-CNR, 34012 Trieste, Italy — [2]Sincrotrone Trieste S.S.p.A., 34012 Trieste, Italy

We report the catalyst-free growth of GaAs and InAs nanowires on Si by molecular beam epitaxy. Well ordered arrays of nanowires of both materials have been obtained. Electron microscopy is used to characterize the nanowires.

TUEp.SEMI.19 16:30

Surface conductivity of epitaxial graphene measured by microscopic probes — •Cécile Naud, Frédéric Gay, Pierre Mallet, and Jean-Yves Veuillen — Neel Institut BP 166 38042 Grenoble cedex 9 France

We present investigations on the structural and electronic structure of epitaxial graphene in connexion with transport properties. In order to perform theses direct measurements we are using microscopic multi-probes.

TUEp.SEMI.20 16:30

Effect of the microwave radiation treatment on photoluminescence spectra of gallium arsenide — •Roman Redko — V. Lashkaryov Institute of Semiconductor Physics, National Academy of Science of Ukraine, 41, prospect Nauky, 03028 Kyiv, Ukraine

To study the long time effect of microwave radiation treatment on a radiative recombination in GaAs. We have obtained that the spectra of luminescence after treatment are changed as well as concentration of local centers.

TUEp.SEMI.21 16:30

Peculiarities of radiative recombination in indium phosphide caused low magnetic field treatments — •Svitlana Redko — V. Lashkaryov Institute of Semiconductor Physics, National Academy of Science of Ukraine, 41, prospect Nauky, 03028 Kyiv, Ukraine

Effect of low magnetic field on a spectrum of defect structure in InP has been investigated. It is established that after treatment changes observed during long time and depended from value of time after treatment

TUEp.SEMI.22 16:30

All-electric detection of the polarization state of terahertz laser radiation — •Sergey Danilov[1], Wolfgang Weber[1], Josef Kiermaier[1], Peter Olbrich[1], Dieter Schuh[1], Werner Wegscheider[1], Dominique Bougeard[2], Gerhard Abstreiter[2], Wilhelm Prettl[1], and Sergey Ganichev[1] — [1]Terahertz Center, University of Regensburg, D-93040 Regensburg, Germany — [2]Walter Schottky Institute, TU Munich, D-85748 Garching, Germany

Room temperature detectors of terahertz laser radiation allowing in all-electric manner determination of Stokes parameters of elliptically polarized radiation have been developed. Detectors operation is based on photogalvanic effects in semiconductor QW structures.

TUEp.SEMI.23 16:30

One-dimensional transport in nanoscaled conductors : revisiting the Boltzmann equation — •Wim Magnus[1,2], Fons Brosens[1], and Bart Soree[2] — [1]Universiteit Antwerpen, Departement Fysica, Groenenborgerlaan 171, B-2020 Antwerpen, Belgium — [2]Interuniversity Microelectronics Centre (IMEC), Kapeldreef 75, B-3001 Leuven, Belgium

We have investigated diffusive and ballistic transport of electrons coexisting in a one-dimensional conductor. To this end we have solved the inhomogeneous Boltzmann equation in the relaxation time approximation, using the characteristic curves method.

TUEp.SEMI.24 16:30

Raman Scattering in Self-Assembled InAs/GaAs Quantum Dots — •Serghei N. Klimin[1], Vladimir M. Fomin[1], Jozef T. Devreese[1], and Dieter Bimberg[2] — [1]Theoretische Fysica van de Vaste Stoffen (TFVS), Universiteit Antwerpen, B-2020 Antwerpen, Belgium — [2]Institut für Festkörperphysik, Technische Universität Berlin, PN 5-2, Hardenbergstrasse 36, D-10623 Berlin, Germany

Multiphonon resonant Raman scattering in self-assembled quantum disks is investigated using a nonadiabatic approach. The calculated ratio of the two- and one-phonon integral intensities is close to the experimental data for self-organized InAs/GaAs quantum dots.

TUEp.SEMI.25 16:30

1.55 μm-emitting InAs Quantum Dots with Ultra-thin Capping Layer — •Vlastimil Křápek[1], Jiří Oswald[2], Alice Hospodková[2], Karla Kuldová[2], Jiří Pangrác[2], Karel Melichar[2], and Eduard Hulicius[2] — [1]Institute of Condensed Matter Physics, Masaryk University, Kotlářská 2, CZ-61137 Brno, Czech Republic — [2]Institute of Physics of the Academy of Sciences of the Czech Republic, v.v.i, Cukrovarnická 10, CZ-16200 Prague, Czech Republic

We report on InAs/GaAs quantum dots with ultra-thin capping layers exhibiting an efficient luminescence around 1.55 μm. The high emission wavelength is explained by the reduced strain and increased volume.

TUEp.SEMI.26 16:30

On 3-dimensional Quantum Hydrodyamic Model for a Photovoltaic — Romeo Negrea[1], •Ioan Zaharie[2], Bogdan Caruntu[1], and Ioan Luminosu[2] — [1]Universitatea Politehnica Timisoara, Department of Mathematics, P-ta Victoriei 2, 300006, Timisoara, Romania — [2]Universitatea Politehnica Timisoara, Department of Physics, Bvd.

In this paper a theoretical model for the behavior of the propagation of electrons in a photovoltaic cell (the electron density and the current density functions) and has as the starting point the Schrödinger equation.

TUEp.SEMI.27 16:30

Imbalanced Fermi Gas in a Trap: Beyond the Mean-Field Approach — •Jacques Tempere, Serghei N. Klimin, and Jozef T. Devreese — Theoretische Fysica van de Vaste Stoffen (TFVS), Universiteit Antwerpen, B-2020 Antwerpen, Belgium

We represent a path-integral treatment of trapped cold fermions with a population imbalance taking into account fluctuations beyond mean-field and effects of nonzero temperature. The calculated and measured density profiles compare favorably to each other.

TUEp.SEMI.28 16:30

All Optical Quantum CNOT Gate Design Using Semiconductor Quantum Dots —

Pratima Sen[1], Mohd. Shakil Qureshi[1,2], J Thomas Andrews[2], and •Pranay K. Sen[2] — [1]School of Physics, Devi Ahilya Vishwavidyalaya, Taksashila Campus, Indore-452 017, India — [2]Department of Applied Physics, Shri G. S. Institute of Technology and Science, Indore-452 003, India

We have analyzed theoretically the possibility of quantum logic operation in a semiconductor Quantum Dot using two-photon absorption mechanism. We suggest the possibility of CNOT gate formation by choosing two pulses of appropriate pulse areas.

TUEp.SEMI.29 16:30

Bistability in a Mode-Locked Semiconductor Disk Laser — Jari Lyytikäinen, Esa Saarinen, and •Oleg Okhotnikov — Optoelectronics Research Centre, Tampere University of Technology, P.O. Box 692, FIN 33101, Tampere, Finland

We present demonstration of hysteresis in a semiconductor disk laser mode-locked with a semiconductor saturable absorber. It is shown that the size of the hysteresis loop can be controlled by varying the gain medium characteristics.

TUEp.SEMI.30 16:30

Fabrication and Properties of Semiconductor Nanowires — •Enculescu Ionut[1], Matei Elena[1], Sima Marian[1], Ion Lucian[2], and Antohe Stefan[2] — [1]National Institute for Materials Physics, Bucharest, Magurele, Romania — [2]University of Bucharest, Faculty of Physics, Atomistilor 103, 77125 Bucharest-Magurele, Romania

We present our latest results regarding the fabrication of II VI group semiconductor nanowires fabrication using the template method. Multisegment nanowires with tailored transport properties were also fabricated by this approach.

TUEp.SEMI.31 16:30

Exciton -Donor Complexes and Trions in Parabolic Semiconductor Quantum Dots in a Magnetic Field — •Anahit Djotyan[1], Artak Avetisyan[2], Eduard Kazaryan[3], and Konstantinos Moulopoulos[4] — [1]Department of Physics, Yerevan State University, 1 A.Manoogian , Yerevan-0025, Armenia — [2]Departement Fysica, Universiteit Antwerpen, Groenenborgerlaan 171, 2002 Antwerp, Belgium — [3]Russian *Armenian (Slavonic) State University, Yerevan, Armenia — [4]Department of Physics, University of Cyprus, P.O. Box 20537, 1678, Nicosia, Cyprus

We have investigated the energetics of an exciton-donor complex as well as of a trion in semiconductor quantum dots in external magnetic field in adiabatic and non-adiabatic approximations, using a variational approach.

TUEp.SEMI.32 16:30

Theory of Hole Mobility in Ge P-channel Inversion Layer — •Yan Zhang[1,2], Massimo Fischetti[1], Bart Soree[2], and Wim Magnus[2,3] — [1]University of Massachusetts, 01003 Amherst, USA — [2]IMEC, Kapeldreef 75, B-3001, Leuven, Belgium — [3]Universiteit Antwerpen, Groenenborgerlaan 171, B-2020 Antwerpen, Belgium

A theoretical study of the hole mobility in Ge p-channel inversion layer for relaxed and compressive/tensile biaxial strained cases is performed. The calculated mobility will be compared with mobility measurements.

TUEp.SEMI.33 16:30

Full multiple scattering X-ray absorption investigation of hydrogen-nitrogen complexes in GaAsN — •Gianluca Ciatto[1], Federico Boscherini[2], Francesco Filippone[3], Giuseppe Mattioli[3], Aldo Amore Bonapasta[3], Marina Berti[4], Gabriele Bisognin[4], Davide De Salvador[4], Antonio Polimeni[5], Mario Capizzi[5], Silvia Rubini[6], Faustino Martelli[6], and Alfonso Franciosi[6] — [1]Synchrotron SOLEIL, L'Orme des Merisiers, Saint Aubin, BP 48, F-91192 Gif sur Yvette CEDEX, France — [2]Department of Physics and CNISM, University of Bologna, Viale C. Berti Pichat 6/2, 40127 Bologna, Italy — [3]CNR, Istituto di Struttura della Materia (ISM), Via Salaria Km 29.5, CP 10, I-00016 Monterotondo Stazione, Italy — [4]MATIS CNR-INFM and Department of Physics, University of Padova, via Marzolo 8, 35131 Padova, Italy — [5]CNISM and Department of Physics, Sapienza Università di Roma, Piazzale A. Moro 2, 00185 Roma, Italy — [6]Laboratorio Nazionale TASC INFM-CNR, Area Science Park, S.S. 14, Km. 163.5, 34012 Trieste, Italy

We performed full multiple scattering simulations of N K-edge X-ray absorption spectra for deuterated GaAsN epilayers. Our results support the formation of deuterium-nitrogen complexes with a core structure of C2v symmetry and a deuterium satellite.

TUEp.SEMI.34 16:30

Electronic structure of fluorites: a DFT-LDA systematic study — •Emiliano Cadelano, Giancarlo Cappellini, and Vincenzo Fiorentini — SLACS-CNR and Dipartimento di Fisica,Cittadella Universitaria di Monserrato(Cagliari), Italy

We study the electronic structure of fluorite crystals,BaF2, CaF2, CdF2, PbF2, SrF2,by means of density functional theory within the local density approximation for the exchange correlation energy (DFT-LDA).

TUEp.SEMI.35 16:30

First-Principle investigations of intrinsic and Si-doped GaAs nanowires — •Nahid Ghaderi[1,2], Maria Peressi[1,3], and Nadia Binggeli[1,4] — [1]CNR-INFM DEMOCRITOS Theory@Elettra Group, Trieste, Italy — [2]Dep. of Physics, Isfahan Univ. of Technology, Iran — [3]Dep. of Theoretical Physics, Univ. of Trieste, Italy — [4]ICTP, Trieste, Italy

We investigate by first principles pseudopotential calculations the structural stability and the electronic properties of intrinsic GaAs nanowires and the relative stability of different donors and acceptors configurations in Si-doped nanowires with different diameters.

TUEp.SEMI.36 16:30

Fabrication and Properties of Transition Metal Doped ZnO Nanowires — •Elena Matei — National Institute for Materials Physics, Bucharest-Magurele, Romania

We present our results on preparation ZnO nanowires doped with cobalt or with copper and manganese in nanoporous membranes. We found that the dopant concentration in the nanowires can be controlled by the deposition potential.

TUEp.SEMI.37 16:30

Fowler-Nordheim tunneling in Fullerene/Silicon hybrid hetero*junction diodes — •Saeed Zamiri[1], Gebhard Matt[2], Thomas Fromherz[3], Christoph Lungenschmied[4], Mateusz Bednorz[2], and Serdar Niyazi Sariciftci[2] — [1]Christian Doppler Laboratory for Surface Optics, Johannes Kepler University, Austria — [2]Linz Institute for Organic Solar Cells (LIOS), Johannes Kepler — [3]Institute for Semiconductor and Solid State Physics, Johannes Kepler University, Austria — [4]Konarka Technologies, Austria

We report on the electrical properties of Silicon/Fullerene hetero-junction diodes. A detailed analysis of the IV-characteristics featuring a Fowler-Nordheim tunneling will be presented.

TUEp.SEMI.38 16:30

Optical Investigation on the SiC by using Scanning Laser Microscopy Techniques — •George Stanciu[1], Stefan Stanciu[1], Radu Hristu[1], and Eustathios Polychroniadis[2] — [1]Center for Microscopy- Microanlysis and Information Processing, University Politehnica of Bucharest, Romania — [2]Department of Physics, Aristotle University of Thessaloniki, Greece

The aim of this work is to present the results which we obtained by using different scanning laser microscopy techniques for investigations of silicon carbide (SiC).

TUEp.SEMI.39 16:30

Peculiarities of the linear propagation of light in semi-infinite fibre arrays — •Ksenia Lyakhomskaya[1] and Piotr Khadzhi[2] — [1]Dniester State University, Tiraspol, MD 3300, Moldova — [2]Institute of Applied Physics, Academy of Sciences of Moldova, Kishinev, 2028, Moldova

The spatial intensity distribution of laser radiation propagaiting in semi-infinite directional coupler based on Chebyshev, Hermitean, Legendre and Gegenbauer arrays with different dependences of coupling constants on the fibre number is studied.

TUEp.SEMI.40 16:30

A Non-equilibrium Green's Functions Solver for Fast Transients in Semiconductors — •Anděla Kalvová[1], Bedřich Velický[2], and Václav Špička[1] — [1]Institute of Physics, v.v.i, Academy of Sciences of the Czech Republic, Na Slovance 2, 182 21 Praha 8, Czech Republic — [2]Charles University, Faculty of Mathematics and Physics, DCMP, Ke Karlovu 5, 121 16 Praha 2, Czech Republic

A novel Non-equilibrium Green's Functions solver for fast transients in semiconductors is presented combining a direct solution with reduction by Quasiparticle Kadanoff-Baym Ansatz and satisfying the non-equilibrium Ward identity.

TUEp.SEMI.41 16:30

Experimental evidence of n-diamond nanocrystals self -assembling — •Marco

Rossi[1], Maria Letizia Terranova[2], Silvia Orlanducci[2], Emanuela Tamburri[2], Daniela Manno[3], Antonio Serra[3], and Emanuela Filippo[3] — [1]Dipartimento di Energetica, Università di Roma 'La Sapienza', Via A. Scarpa 16, 00161 Roma, Italy — [2]Dipartimento di Scienze e Tecnologie Chimiche and MINASlab, Università di Roma 'Tor Vergata', Via della Ricerca Scientifica, 00133 Roma, Italy. — [3]Dipartimento di Scienza dei Materiali, Università del Salento, Via per Monteroni, 73100 Lecce, Italy

We report about the possibility to achieve singlecrystal-like organized 3D particles (with size of some hundreds of nm), using as building blocks n-diamond (s.g. F-43m) nanocrystals (with size of few nm).

TUEp.SEMI.42 16:30

The effects of quantum well numbers on optical properties of GaAs/GaInNAs quantum well structures — •Ayse Erol[1], Metin Aslan[1,2], M. Cetin Arikan[1], and Mika Saarinen[3] — [1]Istanbul University Science Faculty Physics Department 34134 Vezneciler, Istanbul, Turkey — [2]Sakarya University Faculty of Art and Science Physics Department Esentepe Campus, Sakarya, Turkey — [3]Tampere University of Technology Optoelectronics Research Center P.O. Box 692 33101 Tampere, Finland

As-grown and annealed GaInNAs/GaAs samples with 1, 3, 5, and 7 quantum wells were investigated using photoluminescence, photoconductivity, and in-plane photovoltage in order to determine the effects the number of quantum wells.

TUEp.SEMI.43 16:30

Fabrication and Characterization of ZnO Semiconductor Thin Films by Electron Beam Evaporation Technique with Argon Plasma Assistance — •Vivienne Falcão[1,2], Milena Sabino[1], Diego Miranda[1], and José Roberto Branco[1] — [1]CETEC, Belo Horizonte, Brasil — [2]CEFET OP, Ouro Preto, Brasil

ZnO semiconductor thin films have been deposited on glass substrates by e-beam evaporation with argon plasma assistance. The films show good optical and electrical properties which make it a good material for solar cells applications.

TUEp.SEMI.44 16:30

Hybrid nanocrystal-fullerene heterojunctions for photovoltaics — •Michele Saba, Agnieszka Gocalinska, Fabrizio Cordella, Francesco Quochi, Andrea Mura, and Giovanni Bongiovanni — Dipartimento di Fisica, Università di Cagliari, I-09042 Monserrato (CA), Italy

We measured the time needed to extract photoelectrons from colloidal quantum dots embedded in organic matrix and compared it with non-radiative Auger recombination time. Electron extraction dynamics turns out to be crucial for photovoltaic applications.

TUEp.SEMI.45 16:30

Quantum transport in 2D electron-hole system at a type II broken-gap p-GaInAsSb/p-InAs single heterointerface in high magnetic fields — •Konstantin Moiseev[1], Vyacheslav Berezovets[1,2], Maya Mikhailova[1], Robert Parfeniev[1], and Victor Nizhankovskii[2] — [1]A.F. Ioffe Physico-Technical Institute, RAS, 26 Politekhnicheskaya, St. Petersburg, 194021, Russia — [2]International Laboratory of High Magnetic Fields and Low Temperatures, Wroclaw, 50-204, Poland

Planar and vertical quantum magnetotransport in a 2D electron-hole system at a single type II broken-gap InAs/GaInAsSb heterointerface has been studied. Spin-oriented tunneling current of electrons across the heteroboundary through 2D-interface states was found out.

TUEp.SEMI.46 16:30

Theory of Förster Resonant Energy Transfer in Two Dimensions Applied to a Mixed Quantum Dot Monolayer — •Manuela Lunz[1], Louise Bradley[1], Tim Chen[2], and Yuri Gun'ko[2] — [1]Semiconductor Photonics Group, School of Physics, Trinity College Dublin, Dublin 2, Ireland — [2]School of Chemistry, Trinity College Dublin, Dublin 2, Ireland

The Förster radius and energy transfer efficiencies in a mixed CdTe quantum dot monolayer can be analyzed using only lifetime measurements. Efficiencies of around 90% have been observed for acceptor:donor ratios larger than 1:1.

TUEp.SEMI.47 16:30

Effect of electronic excitations on spinodal decomposition of semiconductor solid solutions — Alexander Maslov and •Olga Proshina — Ioffe Physical Technical Institute, St. Petersburg, Russia

The effect of elementary excitation on spinodal decomposition of semiconductor solid solution is investigated theoretically. The critical temperature T_c and parameters of equilibrium state are calculated for a number of III-V compounds.

TUEp.SEMI.48 16:30

Photonic Band Gaps in Metamaterials — •Manoel Vasconcelos[1], Paulo Mauriz[1], Fabio de Medeiros[2], and Eudenilson Albuquerque[2] — [1]Departamento de Ciencias Exatas, CEFET-MA, Brazil — [2]Departamento de Fisica, UFRN, Brazil

We investigate the photonic band gap spectra in quasiperiodic polaritonic photonic crystals, composed of both positive (silica) and negative (metamaterial) refractive index materials, by using a theoretical model based on the transfer matrix approach.

TUEp.SEMI.49 16:30

Hole Density in (Ga,Mn)As layers grown on (001), (110) and (311) GaAs Substrates — •Michael Hirmer, Michael Mayr, Tobias Korn, Ursula Wurstbauer, Dieter Schuh, Werner Wegscheider, and Christian Schüller — Universität Regensburg, Germany

We compare Hall effect and Raman scattering measurements, to determine the hole concentration of thin (Ga,Mn)As epilayers grown on (001), (110) and (311)A substrates before and after annealing, and correlate this to the measured T_c.

TUEp.SEMI.50 16:30

Comparison of different techniques to determine long spin lifetimes in slightly n-doped GaAs bulk and GaAs/AlGaAs quantum wells — •Michael Griesbeck, Andreas Maurer, Robert Schulz, Tobias Korn, Dieter Schuh, Werner Wegscheider, and Christian Schüller — Universität Regensburg, Germany

We compare the results for spin lifetimes in slightly n-doped GaAs bulk and Mn-doped GaAs/AlGaAs quantum wells, determined by time-resolved Faraday rotation (TRFR) technique, resonant spin amplification (RSA) technique and Hanle effect measurements.

TUEp.SEMI.51 16:30

Electronic states in quantum rings of narrow-gap semiconductors — •Clara González-Santander, Mario Amado, and Francisco Domínguez-Adame — GISC, Departamento de Física de Materiales, Universidad Complutense, E-28040 Madrid, Spain

We report on the theoretical electronic structure of two-dimensional quantum rings of finite width made of narrow–gap III–V semiconductors, under strong magnetic fields applied perpendicular to the plane of the quantum ring.

TUEp.SEMI.52 16:30

Flux-tunable Resonant Tunneling Diodes with Aharonov-Bohm-Casher Rings — Francesco Romeo, Roberta Citro, and •Maria Marinaro — Department of Physics "E.R. Caianiello" and CNISM Unit, Via S. Allende 84081 Baronissi (Sa), Italy

A mesoscopic ring subject to the Rashba spin-orbit interaction and sequentially coupled to an interacting quantum dot, in the presence of Aharonov-Bohm flux, is proposed as a flux tunable tunneling diode.

TUEp.SEMI.53 16:30

Voltage percolation thresholds in nanocrystalline silicon — •Magdalena Lidia Ciurea[1], Vladimir Iancu[2], and Ionel Stavarache[1] — [1]National Institute of Materials Physics, 105 bis Atomistilor Street, RO-077125 Magurele, Romania — [2]University Politehnica of Bucharest, 313 Splaiul Independentei, RO-060042 Bucharest, Romania

Voltage thresholds appear in I - V characteristics measured on two types of nanocrystalline silicon systems (wires and dots). These thresholds are caused by percolation processes between the wires and dots, respectively.

TUEp.SEMI.54 16:30

The influence of the shape on the energy levels in silicon quantum dots — •Ana-Maria Lepadatu, Elena Rusnac, and Ionel Stavarache — National Institute of Materials Physics, 105 bis Atomistilor Street, RO-077125 Magurele, Romania

The infinite quantum well formed by a prolate spheroidal dot is used to compute the quantum confinement energy levels. The model represents a significant improvement compared to the classical hard sphere model.

TUEp.SEMI.55 16:30

Control of electron transport in quantum wires and rings with side-coupled nanogates — •Mario Amado[1,2], Enrique Diez[1], Vittorio Bellani[3], David López-Romero[4],

Tuesday

Pedro Orellana[5], Francisco Domínguez-Adame[2], Lucia Sorba[6], and Giorgio Biasiol[7] — [1]Universidad de Salamanca, Salamanca, Spain — [2]Universidad Complutense, Madrid, Spain — [3]Università degli Studi di Pavia, Pavia, Italy — [4]ISOM-UPM, Madrid, Spain — [5]Universidad Católica del Norte, Antofagasta, Chile — [6]NEST-INFM-CNR and Scuola Normale Superiore, Pisa, Italy — [7]Laboratorio Nazionale TASC-INFM-CNR and NEST-INFM-CNR, Trieste, Italy

We have studied several devices with quantum dots (QDs), and nano-rings coupled to a quantum wire (QW). In this work we try to verify experimentally some of our previous theoretical results

TUEp.SEMI.56 16:30

Phonon scattering effects on the noise properties of atomic-sized junctions — •Federica Haupt[1], Tomas Novotny[2], and Wolfgang Belzig[1] — [1]Fachbereich Physik, Universität Konstanz, D-78457 Konstanz, Germany — [2]Department of Electronic Structures, Faculty of Mathematics and Physics, Charles University, Ke Karlovu 5, 121 16 Prague, Czech Republic

We use the extended Keldysh-Green's function method to investigate the influence of inelastic tunneling in atomic-sized junctions. An analytic formula for the current noise in the weak electron-phonon coupling limit is provided.

TUEp.SEMI.57 16:30

Graphene made easy: Large area, two dimensional samples of layered materials — Abhay Shukla, Javed Mazher, •Rakesh Kumar, and Adrian Balan — Université Pierre et Marie Curie-Paris6, UMR7590, Institut de Minéralogie et de Physique des Milieux Condensés, 140 rue de Lourmel, Paris, F-75015, France

We present a simple, scalable method for producing large two dimensional samples of layered materials. This opens up perspectives both for fundamental research as well as for applications as we show with examples of measurements.

TUEp.SEMI.58 16:30

Transmission of supershort light pulses by thin semiconductor films in exciton range of spectrum — •Piotr Khadzhi[1], Dmitrii Markov[2], Alexandru Corovai[2], and Igor Beloussov[1] — [1]Institute of Applied Physics, Academy of Sciences of Moldova, Kishinev, Moldova — [2]Dniester State University, Tiraspol, Moldova

Taking into account the exciton-photon and elastic exciton-exciton interactions we investigated peculiarities of transmission of supershort light pulses by thin semiconductor films. We predict the appearance of time dependent phase modulation and dynamical red and blue shifts of transmitted pulse.

TUEp.SEMI.59 16:30

Two-subband nonlinear optics in a semiconductor quantum well — •Emmanuel Paspalakis — Materials Science Department, School of Natural Sciences, University of Patras, Patras 26504, Greece

We study theoretically four-wave mixing, electromagnetically induced transparency and creation of slow light in a two-subband semiconductor quantum well structure, taking into account the effects of electron-electron interactions using a nonlinear density matrix approach.

TUEp.SEMI.60 16:30

Binding energy of shallow donors in quantum dots: A new approach — •Mario Amado, Rodrigo de Paula Almeida Lima, and Francisco Domínguez-Adame — GISC, Departamento de Física de Materiales, Universidad Complutense, E-28040 Madrid, Spain

We introduce a solvable model for electronic structure calculations of shallow hydrogenic impurities in two-dimensional quantum dots by replacing the Coulomb interaction (local potential) by a projective operator (non-local separable potential, NLP)

TUEp.SEMI.61 16:30

Resonant Rayleigh Scattering of a 2DEG in the Integer and Fractional Quantum Hall Regimes — •Mario Amado[1,3], Vittorio Bellani[2], Enrique Diez[3], Katarzyna Kowalik[4], Marek Potemski[4], Giorgio Biasiol[5], and Lucia Sorba[5,6] — [1]GISC, Departamento de Física de Materiales, Universidad Complutense, E-28040 Madrid, Spain. — [2]Dipartimento di Fisica "A. Volta" and CNISM, Università degli Studi di Pavia, Italy — [3]Departamento de Física Fundamental, Universidad de Salamanca,E-37008 Spain — [4]Grenoble High Magnetic Field Laboratory, CNRS, F-38042 Grenoble, France — [5]National Research Center NEST INFM-CNR and Scuola Normale Superiore, I-56126 Pisa, Italy — [6]Laboratorio Nazionale TASC INFM-CNR, Area Science Park, I-34012, Trieste, Italy.

We studied experimentally the resonant Rayleigh scattering in a high mobility 2DEG in the Integer and Fractional Quantum Hall regimes getting information on disorder, localization and dispersion relations of quasi-particles.

TUEp.SEMI.62 16:30

THz Differential Near-Field Scanning Optical Microscopy for biological applications — Riccardo Degl'Innocenti, •Michele Montinaro, Vincenzo Piazza, and Pasqualantonio Pingue — NEST-CNR-INFM and Scuola Normale Superiore, I-56126 Pisa, Italy

The contribution has been withdrawn by the authors.

TUEp.SEMI.63 16:30

Dynamics of acceptor impact ionization and recombination processes in p-Ge — •Stanislav Paprotskiy, Igor Altukhov, Valeriy Sinis, and Miron Kagan — Institute of Radio Engineering and Electronics, Russian Ac. Sci., Moscow, Mokhovaya 11, Russia

The transient current through the Ge<Ga> samples in pulsed electric fields was studied at different uniaxial pressures. The coefficients of impact ionization and capture for shallow acceptors were determined from these data.

TUEp.SEMI.64 16:30

Conjugated Fullerenes - a new class of organic semiconductors? — Markus Reinmöller, Uwe Ritter, and •Wichard J. D. Beenken — Ilmenau University of Technology, Institute of Physics, Ilmenau, Germany

We calculated conjugated fullerenes with unexpected shapes of molecular orbitals. This makes us assuming that these materials might turn out to form a new class of organic semiconductors with interesting electronic properties.

TUEp.SEMI.65 16:30

Electronic transport through a Rashba quantum dot — •Mario Amado[1], Pedro Orellana[2], and Francisco Domínguez-Adame[1] — [1]GISC, Departamento de Física de Materiales, Universidad Complutense, E-28040 Madrid, Spain — [2]Departamento de Física, Universidad Católica del Norte, Casilla 1280, Antofagasta, Chile

We consider the electronic transport through a Rashba quantum dot coupled to ferromagnetic leads. We investigate the Fano-Rashba effect as a function of the applied magnetic field and Rashba spin-orbit coupling.

TUEp.SEMI.66 16:30

SAW-drivable and light-emitting lateral n-i-p devices — •Giorgio De Simoni[1], Vincenzo Piazza[1], Fabio Beltram[1], Lucia Sorba[1,2], Giorgio Biasiol[2], Harvey Beere[3], and Dave Ritchie[3] — [1]NEST-CNR-INFM and Scuola Normale Superiore, I-56126 Pisa, Italy — [2]Laboratorio Nazionale TASC INFM-CNR, I-34012 Trieste, Italy — [3]Cavendish Laboratory, University of Cambridge, Cambridge CB3 0HE, United Kingdom

We demonstrate a gating-based building scheme for light-emitting and surface-acoustic-wave-drivable n-i-p lateral junctions into an undoped quantum well. Device development will lead to a surface-acoustic-driven single-photon source.

TUEp.SEMI.67 16:30

Thermally Stimulated Optical Emission from Irradiated Graphene Structures — •Krzysztof R. Przegietka, Alicja Chruscinska, and Pawel Szroeder — Institute of Physics, Nicolaus Copernicus University, ul. Grudziadzka 5, 87-100 Torun, Poland

Thermally stimulated optical emission from beta irradiated graphite was observed and analysed by thermoluminescence techniques. These phenomenon seems to be applicable for examining irradiation-induced defects in graphene structures.

TUEp.SEMI.68 16:30

Numerical investigations of the Chalker-Coddington network model and its modifications — •Mario Amado[1], Ara Sedrakyan[1], Andrey Malyshev[1], Francisco Domínguez-Adame[1], and Enrique Diez[2] — [1]GISC, Departamento de Física de Materiales,Universidad Complutense, E-28040 Madrid, Spain — [2]Departamento de Física Fundamental, Universidad de Salamanca, E-37008, Spain

We investigate numerically the Chalker-Coddington (CC) network model for plateau–plateau transitions in the quantum Hall effect via a novel mathematical tool for calculating accurately the localization length in the CC network model.

TUEp.SEMI.69 16:30

Intraband contributions to the self-energy corrections in *ab initio* bandstructure calculations: an extrapolation scheme — •Marco Cazzaniga[1,2], Nicola Manini[1,2], Luca Guido Molinari[1,2], and Giovanni Onida[1,2] — [1]European Theoretical Spectroscopy Facility (ETSF) — [2]Università degli Studi di Milano, Physics Department, via Celoria 16, 20133 Milano (Italy)

We calculate the *GW* corrections for gapless systems including Drude contribution to the screening by an extrapolation of the small-**q** trend of the independent-particle polarizability.

TUEp.SEMI.70 16:30

Dynamics of Weyl quasiparticles in the presence of quantum noise — •Giuseppe Falci — MATIS-INFM, Unita' di Catania — Dipartimento di Metodologie Fisiche e Chimiche (DMFCI),*Università di Catania

Effects of electromagnetic noise on the quasiparticle dynamics in graphene is studied by an exact mapping to a conditional spin boson model. Non-secular pseudospin dynamics, strongly modifies the phisics close at the Dirac points.

TUEp.SEMI.71 16:30

A combined theoretical and experimental analysis of band structure and recombination processes in 1.5 μm quantum dash lasers — •Sorcha Healy[1], Susannah Heck[1], Simon Osborne[1], David Williams[1], Eoin O'Reilly[1,2], Francois Lelarge[3], F Poingt[3], A Accard[3], F Pommereau[3], O Legouezigou[3], and Beatrice Dagens[3] — [1]Tyndall National Institute — [2]University College Cork — [3]Alcatel Thales III-V Laboratory

Calculations show electrons are not confined in the dashes in 1.5 μm InAs/InGaAsP/InP quantum dash in a well structures. Calculations and photoabsorption measurements show strongly polarized recombination. The threshold current remains dominated by non-radiative paths.

16:30 – 18:40

Materials - Poster Session

TUEp.MAT.1 16:30

Very cold neutron scattering on super molecular structure of polypropylene based composites. — •Sergey Kuznetsov[1], Irina Dubnikova[2], Vasiliy Litvin[3], Anatoliy Shelagin[4], and Andrey Udovenko[1] — [1]Lebedev Physical Institute, Russian Academy of Sciences, Moscow, 119991 Russia — [2]Semenov Institute of Chemical Phisics. Russian Academy of Sciences, Moscow, 117977 Russia — [3]Institute of Nuclear Researches , Russian Academy of Sciences, Moscow, 117312, Russia — [4]Moscow Institute of Physics and Technology, Dolgoprudny, Moscow Region, 141700,Russia

Very cold neutrons scattering method was used to study the super molecular structure of polypropylene/inorganic filler composites. The multiwalls carbon nanotubes (MWCNT)and calcium carbonate submicron particles were used as the fillers.

TUEp.MAT.2 16:30

enhancement of the thermal conductivity of AlN ceramics by nano-scale processing: a theoretical study — •Abdullah A. AlShaikhi and Gyaneshwar P. Srivastava — School of Physics, University of Exeter, Stocker Road, Exeter EX4 4QL, United Kingdom

We have theoretically studied and quantitatively analysed the enhancement of thermal conductivity of Y_2O_3- and CaO-doped AlN *microceramics* due to addition of AlN nano-sized particles, and AlN *nanoceramics* due to addition of Y_2O_3.

TUEp.MAT.3 16:30

Searching for Novel CT Complexes - X-ray, Neutron Scattering, Infrared and Raman Spectroscopy, DFT Simulation — •Grazyna Bator[1], Andrzej Pawlukojc[2], Lucjan Sobczyk[1], Michael Prager[3], Wanda Sawka-Dobrowolska[1], and Eugeniusz Grech[4] — [1]Faculty of Chemistry, University of Wrocław, Joliot-Curie 14, 50-383 Wrocław, Poland — [2]Joint Institute for Nuclear Research, 141980 Dubna, Russia and Institute of Nuclear Chemistry and Technology, Dorodna 16, 03-195 Warsaw, Poland — [3]Institut für Festkörperforschung, Forschungszentrum Jülich, 52425 Jülich, Germany — [4]Institute of Chemistrv and Environmental Protection, Szczecin University of Technology, Piastów Al. 12, 71-065, Szczecin, Poland

The main purpose of investigations was determination of physical properties of complexes containing selected π-electron donor (HMB, TMP, DMP) and acceptor molecules (TCNB, TCNQ, CLA, H2SQ, TCNE). This contribution is a review of our results.

TUEp.MAT.4 16:30

The Crystallinity of SiC Grown from the Vapour Phase — •Bernard Watts[1], Giovanni Attolini[1], Matteo Bosi[1], Giancarlo Salviati[1], Saulius Kaciulis[2], Luca Pandolfi[2], and Oscar Martinez[3] — [1]IMEM/CNR, Parco Area delle Scienze 37A. 43010 Fontanini (Parma), Italy — [2]ISMN-CNR, Via Salaria km. 29,3, 00016 Monterotondo Stazione, Rome, Italy — [3]Fisica de la Materia Condensada, ETSII, Universidad de Valladolid, 47011 Valladolid, Spain

A study amorphous SiC grown by MOVPE shows that not only does excess carbon precursor have a profound effect on the crystallinity and morphology of the material but gas flow rate is an important parameter.

TUEp.MAT.5 16:30

Organic Ferroelectric Materials - Relationship between Structure and Physical Properties in Novel Pure Organic Ferroelectric Compound, TMNB — •Przemyslaw Szklarz, Angelika Gagat, Vasyl Kinzhybalo, and Grazyna Bator — Faculty of Chemistry, University of Wrocław, Joliot-Curie 14, 50-383 Wrocław, Poland

In this contribution we present the results of our studies on structure, polar properties and mechanism of phase transitions in novel, pure organic, ferroelectric single crystal, TMNB.

TUEp.MAT.6 16:30

Phase Transition in Doped Crystals — •Bahruz Gadjiev — International University for Nature, Society and Man, Dubna, Russia

We investigated influence of the weak disorder on the phase transition. Dependence of critical indexes from fractal dimensions of defects distribution is obtained.

TUEp.MAT.7 16:30

Determination of The Electronic Structure of LaCrO3 Ceramic — •Somayeh Hosseini[1], Mojtaba Servatkhah[2], and Hamdolah Salehi[1] — [1]Phys. Dep.,Shahid Chamran University of Ahvaz,Ahvaz, Iran — [2]Phys. Dep.,Shiraz University,Shiraz, Iran

The structural and electronic properties of LaCrO3 in cubic and orthorhombic structure were investigated using a FP-LAPW method in the framework of DFT with various Approximations, considering spin-orbital coupling and neglecting it.

TUEp.MAT.8 16:30

structure and dynamics of point and extended defects in hard and soft ferroelectrics — •Ruediger-A. Eichel — TU Darmstadt

The defect chemistry of acceptor- and donor-type modified PZT ceramics is characterized by EPR spectroscopy. In particular, models for softening and hardening are developed. Furthermore, the kinetic behaviour is monitored, providing microscopic insight in the mechanism of ferroelectric aging.

TUEp.MAT.9 16:30

Hybrid functional studies on $SrTiO_3$ — •Roman Wahl, Doris Vogtenhuber, and Georg Kresse — Faculty of Physics, University of Vienna and Center of Computational Material Science, Sensengasse 8/12, 1090 Wien, Austria

We present a study of the structural, electronic and phonon properties of the cubic and tetragonal phase of $SrTiO_3$ using the recently developed PBEsol GGA functional and the HSE03 hybrid functional.

TUEp.MAT.10 16:30

Raman Spectroscopic Study Of Stibnite (Sb2S3) — •Paolo Sereni[1], Maurizio Musso[1], Herbert Dittrich[1], Werner Lottermoser[1], Pierre Madl[1], Günther Schmidt[2], Peter Blaha[2], Karlheinz Schwarz[2], Claudia Ambrosch-Draxl[3], Alexander Reinmüller[4], Peter Knoll[4], and Kurt Krenn[5] — [1]Department of Materials Engineering and Physics, University of Salzburg, A-5020 Salzburg Austria — [2]Institute of Materi-

als Chemistry, Division of Theoretical Materials Chemistry, Vienna University of Technology, A-1060 Wien, Austria — [3]Department of Materials Physics, Chair of Atomistic Modeling and Design of Materials, University of Leoben, A-8700 Leoben, Austria — [4]Institute of Physics, Department of Experimental Physics, University of Graz, A-8010 Graz, Austria — [5]Institute of Earth Sciences, Department of Mineralogy and Petrology, University of Graz, A-8010 Graz, Austria

Raman spectroscopic measurements in backscattering geometry on a single crystal sample of Stibnite, Sb2S3, a naturally occurring mineral with semiconducting properties, have been performed. We present the results obtained.

TUEp.MAT.11 16:30

Influence of Intercaled Linear Molecules on the Structural and Physical Characteristics of Fullerite C60 — •Nikolay N. Galtsov, Anatolii I. Prokhvatilov, and Galina N. Dolgova — B.Verkin Institute for Low Temperature Physics and Engineering, Kharkov, Ukraine

Polycrystalline fullerite C_{60} intercaled by CO and N_2, was studied by X-ray difractometry. The occupancies of voids by the dopants and the influence of impurity on the lattice parameters and phase transitions has been determined.

TUEp.MAT.12 16:30

Structural, magnetic, dielectric and dynamical studies in Eu-doped hexagonal multiferroic YMnO3 ceramic — •Welberth Ferreira[1], Agostinho Moreira[1], Abílio Almeida[1], Brochado Oliveira[1], Machado Silva[1], Maria Margarida Costa[2], João Pedro Araújo[1], Maria Armanda Sá[1], Vitor Rodrigues[2], Lourdes Andrade[2], Pedro Tavares[3], and Tânia Mendonça[3] — [1]IFIMUP. Faculdade de Ciências da Universidade do Porto. Rua do Campo Alegre, 687. 4169-007 Porto. Portugal — [2]CEMDRX, Departamento de Física, Universidade de Coimbra, P3004-51 Coimbra. Portugal — [3]Departamento de Química. Universidade de Trás-os-Montes e Alto Douro. Apartado 1013, 5001-801 Vila Real. Portugal.

In this work we present structural studies and specific heat, magnetic susceptibility, dielectric constant and thermally stimulated depolarization current measurements for YxEu1-xMnO3 ceramics, with x=0.9 and 0.8, in the temperature range 10-200K.

TUEp.MAT.13 16:30

Determination of the Electronic Structure of LaCrO3 Ceramic — •Somayeh Hosseini[1], Mojtaba Servatkhah[2], and Hamdolah Salehi[1] — [1]Phys. Dep.,Shahid Chamran University of Ahvaz,Ahvaz, Iran — [2]Phys. Dep.,Shiraz University,Shiraz, Iran

Structural and electronic properties of cubic and horhombic LaCrO3 are discussed along the FP-LAPW Density Functional Theory and various approximations, taking acount spin-orbital coupling. A strong covalent band between O-O, Cr-O and La-O is found.

TUEp.MAT.14 16:30

Optimisation of CaCO3 Precipitation Process by Ultrasonic Field — •Irinela Chilibon[1], Carmencita Mateescu[2], Raluca Isopescu[3], and Dumitru Turtoi[3] — [1]National Institute of R&D for Oproelectronics, INOE-2000, PO Box MG-5, 77125, Bucharest-Magurele, Romania — [2]INCDFM, Bucharest-Magurele, Romania — [3]UPB, Bucharest, Romania

This paper presents aspects concerning the CaCO3 process optimisation by ultrasonic field. The ultrasonic field contribute to the improvement of crystalline grain size distribution, important particles fraction of nanometer size and the solubility velocity decreasing.

TUEp.MAT.15 16:30

Oxygen diffusion in Ruddlesden-Popper phase type : the special case of La2CoO4 — •Loïc Le Dréau[1], Werner Paulus[1], Juerg Schefer[2], and Kazimierz Conder[3] — [1]Université Rennes1, Sciences Chimiques de Rennes UMR 6226, Campus Beaulieu bat 10B 35042Rennes, France — [2]ETH Zürich & Paul Scherrer Institute, Laboratory for Neutron Scattering, 5232 Villigen PSI, Switzerland — [3]Paul Scherrer Institute, Laboratory for Development and Methods, 5232 Villigen PSI, Switzerland

Singlecrystal samples of La2CoO4+d have been grown by optical furnace method and have shown some superstructure reflection by elastic neutron scattering analyses, revealing a new oxygen long range ordering inducing an interesting oxygen mobility process.

TUEp.MAT.16 16:30

Raman spectroscopic study of pure and Ba-doped $PbSc_{0.5}Ta_{0.5}O_3$ and $PbSc_{0.5}Nb_{0.5}O_3$ relaxor ferroelectrics at high pressures — •Anna-Maria Welsch[1], Boriana Mihailova[1], Ulrich Bismayer[1], Marin Gospodinov[2], Rainer Stosch[3], and Bernd Guettler[3] — [1]Universitaet Hamburg, Grindelallee 48, 20146 Hamburg, Germany — [2]Institute of Solid State Physics,Tsarigradsko Chausse72, 1784 Sofia, Bulgaria — [3]PTB Braunschweig, Bundesallee 100, Braunschweig, Germany

Pure and Ba-doped Pb-based perovskite relaxors $PbSc_{0.5}Ta_{0.5}O_3$ and $PbSc_{0.5}Nb_{0.5}O_3$ were investigated by Raman spectroscopy under high pressure up to 10 GPa at room temperature. New insights into pressure-induced structural transformations are reported.

TUEp.MAT.17 16:30

Magnetic anisotropy of aligned iron-filled carbon nanotubes films — •Tatiana L. Makarova[1], Lyubov G. Bulusheva[2], Alexander V. Okotrub[2], and Alexander G. Kurenya[2] — [1]Umeå University, 90187, Umeå, Sweden — [2]Nikolaev Institute of Inorganic Chemistry, Siberian Division, Russian Academy of Sciences, Novosibirsk, 630090 Russia

Films of iron-filled carbon nanotubes oriented perpendicularly to the substrate show differences in saturation and remanent magnetization, coercive force and even Curie temperatures for the magnetic field oriented along or perpendicularly the nanotube long axis.

TUEp.MAT.18 16:30

Metallic Nanotubes Prepared by Electroless Deposition in Ion Track Membranes — •Enculescu Ionut[1], Matei Elena[1], Sima Marian[1], and Neumann Reinhard[2] — [1]National Institute for Materials Physics, Bucharest Magurele, Romania — [2]GSI Darmstadt, Germany

We prepared metallic micro and nanotubes by electroless deposition on ion track nanoporous membranes. Self supporting metallic nanotubes membranes with a wide field of potential applications were obtained by electrochemical thickening.

TUEp.MAT.19 16:30

Influence of additives on electrodeposition of metallic nanowires with magnetic properties — •Elena Matei — 1National Institute of Materials Physics, Magurele, Romania

We present our results in metallic nanowires preparation, using nanoporous membranes as templates. When employing polyvinilpyrolidone as an additive in the deposition bath, a pore filling efficiency of almost 80% was obtained.

TUEp.MAT.20 16:30

Plasmons in Single-Wall Carbon Nanotubes — •Sasa Dmitrovic, Tatjana Vukovic, Bozidar Nikolic, Milan Damnjanovic, and Ivanka Milosevic — Faculty of Physics, University of Belgrade, Studentski trg 12-16, P. O. Box 368, Belgrade 11001, Serbia

We've calculated dielectric functions and plasmon excitations in isolated single-wall carbon nanotubes of various chiralities within dipole approximation and RPA. Energies of π and $\pi+\sigma$ plasmon and π plasmon dispersion properties are the main results.

TUEp.MAT.21 16:30

Ab-initio investigation on point defects in $CaCu_3Ti_4O_{12}$ — Pietro Delugas[1], Paola Alippi[2], and •Vito Raineri[1] — [1]CNR-IMM, Stradale Primosole 50, I-95127 Catania, Italy — [2]CNR-ISM, via Salaria km. 29.300, I-00016 Monterotondo Stazione (RM), Italy

CCTO is by many indicated as a ferroectric relaxor. The question is still open to dispute. Point defects are crucial for this debate. We present a wide theoretical screening of point defects in CCTO.

TUEp.MAT.22 16:30

Raman Scattering from Heterofullerenes and non-Fullerene Peapods — •Wolfgang Plank[1], Hans Kuzmany[1], Herwig Peterlik[1], Tetuya Saito[2,3], Sumio Iijima[4], and Nikos Tagmatarchis[5] — [1]Faculty of Physics, University of Vienna, Strudlhofgasse 4, 1090 Wien, Austria — [2]Research Center for Advanced Carbon Materials, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba 305-8565,Japan — [3]PRESTO, Japan Science and Technology Agency, Kawaguchi 332-0012, Japan — [4]Department of Materials Science and Engineering, 21st century COE (Nanofactory), Meijo University, Nagoya 468-8502, Japan — [5]Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vassileos Constantinou Ave.,Athens 11635, Greece

We studied peapods prepared with the heterofullerene $C_{59}N$ and the non-fullerene molecules ferrocene, o-carborane and adenine as filling species. Sample analysis was done by multifre-

quency Raman spectroscopy and X-ray diffraction.

TUEp.MAT.23 16:30

Exfoliation of Pristine Graphene from Bulk Graphite Using Liquid Phase Systems — •Mustafa Lotya[1], Yenny Hernandez[1,2], and Jonathan Coleman[1,2] — [1]School of Physics, Trinity College Dublin, Ireland — [2]Centre for Research on Adaptive Nanostructures and Nanodevices, Trinity College Dublin, Ireland

We show exfoliation of pristine graphene using liquid phase dispersion systems. The quality of exfoliation is assessed by a range of techniques including extensive transmission electron microscopy.

TUEp.MAT.24 16:30

Electrical features of packed homotype bundles formed by aligned single-walled carbon nanotubes — •Daniela Manno[1], Antonio Serra[1], Emanuela Filippo[1], Maria Letizia Terranova[2], Silvia Orlanducci[2], and Marco Rossi[3] — [1]Dipartimento di Scienza dei Materiali, Universita' del Salento I-73100 Lecce — [2]Dipartimento di Scienze e Tecnologie Chimiche and MINAS, UniVersità di Roma *Tor Vergata*, I-00133 Roma — [3]Dipartimento di Energetica and CNIS, Università di Roma *La Sapienza*, I-00161 Roma

In this work we report about the morphological, structural and electrical properties of ribbons constituted by homotype SWCNT bundles. The effects of the bundle-bundle aggregation has been investigated.

TUEp.MAT.25 16:30

Phonon dynamics in Strontium Titanate Ceramics doped with Yttrium — •Abílio Almeida[1], J. Agostinho Moreira[1], Alex Tkach[1], Tatiana Correia[1], Paula Vilarinho[2], DA Kiselev[2], and Andrei Kholkin[2] — [1]Department of Physics of Science Faculty, IFIMUP, University of Porto, Rua do Campo Alegre, 687, 4169-007 Porto, Portugal — [2]of Ceramics and Glass Engineering, CICECO, University of Aveiro, 3810-193 Aveiro, Portugal

TO1 dynamics of Y-doped STO ceramics has been studied by Raman spectroscopy to look for the existence of a polar state at room temperature suggested by PFM measurements. Discussion of experimental results will be presented.

TUEp.MAT.26 16:30

Polarized emission from micron scale patterns of nanorods ordered by fluid flow and external electric fields — •Roman Krahne, Concetta Nobile, Luigi Carbone, Giovanni Morello, Milena De Giorgi, Liberato Manna, and Roberto Cingolani — National Nanotechnology Laboratoy of CNR-INFM, Lecce, Italy

CdSe/CdS nanorods, grown by wet chemistry, were aligned from solution on Si/SiO2 substrates by external electric fields and solvent fluid flow. Micron scale patterns of nanorods ordered in smectic phase show polarized emission of light.

TUEp.MAT.27 16:30

Structure and Properties of Ceramic Multiferroic Composites from PZT-BT Solid Solution — •Cornel Miclea[1], Constantin Tanasoiu[1], Corneliu Florin Miclea[1], Ion Spanulescu[2], Luminita Amarande[1], Alin Iuga[1], Marius Cioangher[1], Lucian Trupina[1], Ciprian Tiberiu Miclea[2], and Madalina Susu[2] — [1]National Institute of Materials Physics, Str. Atomistilor 105 bis, 077125, Magurele-Bucharest, ROMANIA — [2]Hyperion University, Faculty of Physics, Calea Calarasilor 169, Bucharest, ROMANIA

In the present investigation we prepared composites of ferroelectric lead zirconate titanate (PZT) and ferroelectric barium titanate (BT) nanopowders.

These materials was investigated by X-ray diffraction and electron microscopy and the piezoelectric properties were determined

TUEp.MAT.28 16:30

Layered Structure Characteristics of Product Martensite in Copper Based Shape Memory Alloys — •Osman Adiguzel — Firat University Department of Physics 23169 Elazig / Turkey

Shape memory alloys undergo martensitic transition on cooling from high temperatures.The product phases have the unusual complex structures called long period layered structures such as 9R or 18R depending on the stacking sequences.

TUEp.MAT.29 16:30

Synthesis and luminescent properties of Gd2O3:Eu hollow spheres — •Jianguo Zhou, Yongxin Wang, Huizhen Wang, Fengying Zhao, and Lin Yang — College of Chemistry and Environmental Science, Henan Normal University, Xinxiang 453007, Henan Province, P.R.China

In this paper we report for the first time the synthesis of Gd2O3:Eu phosphors hollow spheres. The structure and morphology and luminescent properties of Gd2O3:Eu phosphors hollow phosphors were studied

TUEp.MAT.30 16:30

Synthesis and luminescent properties of Y2O3:Eu3+phosphors — •Jianguo Zhou, Baolin Wang, Fengying Zhao, and Lin Yang — College of Chemistry and Environmental Science, Henan Normal University, Xinxiang 453007, Henan Province, P.R.China

In this paper we report for the first time the synthesis of Y2O3:Eu3+ phosphors in a room temperature ionic liquid([BMIM]BF4). The structure and morphology and luminescent properties of Y2O3:Eu3+ phosphors were studied.

TUEp.MAT.31 16:30

phase transitions sequence in BA1-xBPx system by infrared reflectivity — •Tatsiana Dekola[1], Jose Ribeiro[2], and Luis Vieira[3] — [1]Centro de Física, Universidade do Minho, Campus de Gualtar, 4710-057 Braga, Portugal — [2]Centro de Física, Universidade do Minho, Campus de Gualtar, 4710-057 Braga, Portugal — [3]Centro de Física, Universidade do Minho, Campus de Gualtar, 4710-057 Braga, Portugal

The temperature dependencies of vibrational modes confirm a complex mechanism underlying the phase transitions sequence in mixed in BA1-xBPx system

TUEp.MAT.32 16:30

Energy Levels Scheme of Cr3+ Doped in LiAl5O8 Spinel — •Calin Avram[1], Mikhail Brik[2], Ilmo Sildos[2], Nicolae Avram[1,3], and Adrian Sorin Gruia[1] — [1]Department of Physics, West University of Timisoara, Bulevardul Vasile Parvan Nr.4, Timisoara 300223, Romania — [2]Institute of Physics, University of Tartu, Riia Street 142, 51014 Tartu, Estonia — [3]Academy of Romanian Scientist, Splaiul Independentei Nr.54, 050094 Bucharest, Romania

We calculated energy levels of Cr3+ ion doped in LiAl5O8 spinel using the exchange charge model. The obtained energy levels and estimated Racah parameters are in good agreement with experimental spectroscopic data.

TUEp.MAT.33 16:30

PbTiO3/PVDF Ceramic/Polymer Composites — •Irinela Chilibon[1], Jose Marat-Mendes[2], Paulo Inacio[2], and Rui Igreja[2] — [1]National Institute of R&D for Optoelectronics, INOE-2000, PO Box MG-5, 77125, Bucharest, Romania — [2]Department of Materials Science, Faculty of Science and Technology, New University of Lisbon, 2829 - 516 Caparica, Portugal

Paper presents PbTiO3 ceramic powders obtained by sol-gel processing, for ceramic/polymer composites. Two PbTiO3/P(VDF-TrFE) ceramic/polymer composites were made by mixing PT and PVDF powders in 50% fraction volumes, presenting more than 17 kV/m electric field.

TUEp.MAT.34 16:30

Spatial dependence of observed Raman frequencies and disorder in monolayer graphene — •Enzo Cazzanelli[1,2], Marco Castriota[1,2], Daniela Pacilè[1], Luigi Papagno[1], and Gino Mariotto[3] — [1]Department of Physics, University of Calabria, 87036-Rende (CS), Italy — [2]Laboratory LICRYL CNR-INFM and CEMIF.CAL, 87036- Rende (CS), Italy — [3]Faculty of Sciences, University of Verona, Strada le Grazie 15, 37134-Verona (VR), Italy

The frequency of G' (2D) Raman band shows a significant spatial dependence only in single layer (1L) graphene: its variation is about 20 cm^{-1}, for displacements of about 10 μm, under the same excitation wavelength.

16:30 – 18:40

Surface, Interface and Low-Dimensional Physics I - Poster Session

TUEp.SUR.1 16:30

Boson Peaks in Disordered Structures with Clusterization of Impurities — Sergey Feodosyev, Igor Gospodarev, •Oleksandr Kotlyar, Kyrillo Kravchenko, Elena Manzhelii, and Yevgen Syrkin — B.Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkov, Ukraine

Additional negative dispersion of sound waves in solid solutions, including krypton-argon one, is shown to results in boson peak emergence and relative variation of low-temperature heat capacity whose temperature dependence exhibits two-extremum behavior.

TUEp.SUR.2 16:30

Local Vibrations of Light Impurities Near Ag(111) Surface — Sergey Feodosyev, Igor Gospodarev, •Oleksandr Kotlyar, and Elena Manzhelii — B.Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkov, Ukraine

Frequencies and intensities of local vibrations are calculated for Ag crystal lattice with Al, Mg, or Mn impurities. Developed analytical approach allows to deduce parameters of defect structure and of interatomic interactions from experiment.

TUEp.SUR.3 16:30

Surface Envelope Solitons in Elastic Systems with Restricted Geometry — Alexander Kovalev and •Olena Sokolova — B.Verkin Institute for Low Temperature Physics and Engineering, Kharkov, Ukraine

The envelope solitons in the thin plate and in the film covering the elastic half-space are investigated theoretically. We obtained the base equations and proposed the version of asymptotic procedure for finding envelope soliton.

TUEp.SUR.4 16:30

Electron-phonon coupling in nanoparticles: effect of nanoparticle structure and surrounding medium — •Volodymyr Dzhagan[1], Mykhailo Valakh[1], Anatoliy Yaremko[1], and Dietrich Zahn[2] — [1]Institute of Semiconductor Physics of National Acad. Sci. of Ukraine, prospekt Nauky 45, Kyiv 03028, Ukraine — [2]2. Institute of Physics, Chemnitz University of Technology, Reichenhainer Straße 70, D-09126 Chemnitz, Germany

The effect of nanoparticles size, passivating shell, and surrounding medium onto the electron-phonon coupling in II-VI semiconductor nanoparticles is studied experimentally by resonant Raman scattering, optical absorption, photoluminescence spectroscopy, and considered theoretically

TUEp.SUR.5 16:30

Stress in CoO(111) layers on Ir(001) — •Dirk Sander, Zhen Tian, and Jürgen Kirschner — Max Planck Institute of Microstructure Physics

The results of combined monolayer stress measurements and low energy electron diffraction experiments are discussed to elucidate the correlation between structure and stress in both Co and CoO(111) films on Ir(001).

TUEp.SUR.6 16:30

Growth, CO adsorption and encapsulation of Pt nanoparticles supported on Fe3O4 (111) films — •Zhihui Qin, Mikolaj Lewandowski, Yingna Sun, Shamil Shaikhutdinov, and Hajo Freund — Fritz-Haber Institute of the Max Planck Society, Berlin, Germany

Morphology and CO adsorption properties of Pt particles formed on Fe3O4(111) films are altered upon annealing to elevated temperatures. Due to SMSI effect vacuum annealing above 800K leads to encapsulation of the Pt particles.

TUEp.SUR.7 16:30

Optical Properties of Crystal Water in the Magnesium Sulphite Hexahydrate — Zhelyu Bunzarov[1] and •Petya Petkova[2] — [1]"St. Kliment Ohridski", Sofia, Bulgaria — [2]"Konstantin Preslavsky", Shumen, Bulgaria

The structure in the absorption spectra of MgSO3.6H2O from 800 to 1200nm is determined by the crystal water. It has been proved that the crystal symmetry induces an optical anisotropy in the crystal water absorption.

TUEp.SUR.8 16:30

Thermomagnetic effects in Q2D organic conductors — •Olga Kirichenko[1], Igor Kozlov[1], Danica Krstovska[2], and Valentin Peschansky[1] — [1]B.I.Verkin Institute for Low Temperature Physics and Engineering, National Academy of Sciences of Ukraine, 47 Lenin ave, Kharkov, 61103, Ukraine — [2]Faculty of Natural Sciences and Mathematics, Physical Institute, P.O.Box 162, 1000, Skopje, Republic of Macedonia

We derive thermomagnetic kinetic coefficients of a layered conductor placed in a quantizing magnetic field. It is shown that the Q2D character of electron energy spectrum results in giant quantum oscillations of the thermo-emf.

TUEp.SUR.9 16:30

Thermodynamic properties of low-dimensional adsorbate on closed-end carbon nanotube bundles — Tatiana Antsygina, Marina Poltavskaya, •Igor Poltavsky, and Konstantin Chishko — B. Verkin Institute for Low Temperature Physics and Engineering

Thermodynamics of an atomic deposit adsorbed in grooves, on the outer surface, and in interstitials of closed-end carbon nanobundles is investigated theoretically. Average adsorbate densities, adsorption isotherms, isosteric heat and heat capacity are calculated.

TUEp.SUR.10 16:30

Optical Properties of Sol - Gel Fabricated Co/SiO2 Nanocomposites — •Oleg Yeshchenko[1], Igor Dmitruk[1], Alexandr Alexeenko[2], and Andriy Dmytruk[3] — [1]Physics Department, National Taras Shevchenko Kyiv University, 2/1 Akademik Glushkov prosp., 03127 Kyiv, Ukraine — [2]Laboratory of Technical Ceramics and Silicates, Gomel State Technical University, 48 October prosp., 246746 Gomel, Belarus — [3]Center for Interdisciplinary Research, Tohoku University, Aoba-ku, Aramaki Aza Aoba, 980-8578 Sendai, Japan

Cobalt nanoparticles were grown in silica matrix using the sol-gel technique. In optical spectra we observed bands corresponding to surface plasmon resonance in Co nanoparticles as well as the bands of cobalt ions and oxides.

TUEp.SUR.11 16:30

The optical conductivity of graphene — •Nuno Peres[1], Tobias Stauber[1], and Antonio Castro neto[2] — [1]University of Minho, Physics Department, Braga, Portugal — [2]Department of Physics, Boston University, Boston, USA

We study the infrared conductivity of graphene at finite chemical potential and temperature taking into account the effect of phonons and disorder due to charged impurities and unitary scatterers.

TUEp.SUR.12 16:30

Thermoelectric mechanism of electromagnetic-acoustic transformation in organic conductors — •Danica Krstovska and Olga Galbova — Faculty of Natural Sciences and Mathematics, Department of Physics, P. O. Box 162, 1000 Skopje

The thermoelectric mechanism of electromagnetic-acoustic transformation of the energy in layered organic conductors with quasi-2D energy spectrum is considered. It allows new important information on the electronic structure of the organic conductors to be obtained.

TUEp.SUR.13 16:30

Self-organisation of semiconducting conjugated polymers in thin layers and in bulk — •Emil J. Samuelsen[1], Dag W. Breiby[1], Jens W. Andreasen[2], and Kalle Levon[3] — [1]Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway — [2]Polymer Department, Risø National Laboratory, Roskilde, Denmark — [3]Chemical and Biological Science, Polytechnic University, Brooklyn, New York, USA

Deposited semi-conducting conjugated polymer layers are shown to self-organise relative to the substrate, as observed by diffraction and imaging. Additional self-organisation is evidenced through long-period superstructures revealed by small-angle x-ray scattering, interpreted as chain folding.

TUEp.SUR.14 16:30

New Evidence of Molecular Adsorption of O2 on Si(111)-7x7 Surface — Rong-Li Lo[1], Ing-Shouh Hwang[2], and •Tien T. Tsong[2] — [1]Department of Physics, National Tsing-Hua University, Hsinchu 300, Taiwan — [2]Institute of Physics, Academia Sinica, Nankang, Taipei 115, Taiwan

By direct STM observations of O2-O2 reaction on Si(111)-7x7 surface at high temperatures, we achieve the confirmation of the molecular adsorption of O2 and the explanations for the previous contradictory conclusions on this subject.

TUEp.SUR.15 16:30

Vanishing effects of the Landau level broadening as $T \longrightarrow 0$ — •Rayda Gammag and Cristine Villagonzalo — Structure and

Dynamics Group, National Institute of Physics, University of the Philippines Diliman, Quezon City, 1101 Philippines

The contribution has been withdrawn by the authors.

TUEp.SUR.16 16:30

Electronic upconversion effect in nanodevices — •Karel Král — Institute of Physics of Acad. Sci. of Czech Republic, v.v.i., Prague, Czech Republic

Electronic multiple scattering on the LO phonons can lead to a nonadiabatic effect of spontaneous generation of voltage between contacts of a nanodevice. The theory of the effect is discussed including the relation to experiments.

TUEp.SUR.17 16:30

The binary system Pt/Cu(111):An STM study of heteroepitaxial growth and subsequent alloy formation — •Christian Breinlich, Séverine Le Moal, Conrad Becker, and Klaus Wandelt — Institute of Physical and Theoretical Chemistry, University of Bonn, Wegelerstr. 12, D-53115, Bonn, Germany

The heteroexpitaxial growth of Pt on a Cu(111) surface in the submonolayer regime has been studied by LT-STM and evaluated quantitatively using nucleation theory. Annealing leads to Pt diffusion into the surface and alloy formation.

TUEp.SUR.18 16:30

Non-standard Dynamic Scaling on Riemannian Interfaces — •Carlos Escudero — Instituto de Matemáticas y Física Fundamental, Consejo Superior de Investigaciones Científicas, C/ Serrano 123, 28006 Madrid, Spain

Growth phenomena on Riemannian interfaces present properties completely different from their planar counterparts. Fundamental differences are the loss of the interface correlation through time and the irrelevance of the noise in two or higher dimensions.

TUEp.SUR.19 16:30

Characterization of bimetallic Au/Pd(110) surfaces — •Marco Moors[1], Tomasz Kobiela[2], Marco Kralj[3], Tobias Pertram[1], Conrad Becker[1], and Klaus Wandelt[1] — [1]Institute of Physical and Theoretical Chemistry, University of Bonn, Wegelerstr. 12, D-53115, Bonn, Germany — [2]Faculty of Chemistry, Warsaw University of Technology, Noakowskiego 3, 00664 Warsaw, Poland — [3]Institute of Physics, P.O. Box 304, Zagreb HR-10000, Croatia

Au films on Pd(110) as studied with UPS, PAX and STM are found to form pseudomorphic unreconstructed and reconstructed Au overlayers, as well as stable AuPd surface alloys, depending on the Au coverage and temperature.

TUEp.SUR.20 16:30

Electron-electron interactions and the magneto-optical properties of graphene — Yuri Bychkov[1,2] and •Gerard Martinez[1] — [1]GHMFL, CNRS, B.P. 166, Grenoble Cedex 9, France — [2]L.D. Landau Institute for Theoretical Physics, 117940 Moscow V-334, Russia

It is shown that the introduction of electron-electron interactions, within the Hartree-Fock approximation, in the magneto-optical response of graphene can explain quantitatively the different re-normalizations of the Fermi velocity as observed experimentally for all transitions.

TUEp.SUR.21 16:30

Probing the Initial Stages of Solid State Reactions — •Sonia Pin[1], Paolo Ghigna[1], Eliana Quartarone[1], Giorgio Spinolo[1], and Francesco D'Acapito[2] — [1]Dipartimento di chimica-fisica "M.Rolla", Università di Pavia, Viale Taramelli 16, I-27100, Pavia (Italy) — [2]GILDA-CRG European Synchrotron Radiation Facility (ESRF), BP 220, F-38043 Grenoble Cedex, France

The initial stages of solid state reactions have been probed. The formation of Zn-Al spinel has been investigated using fluorescence EXAFS as a probe. Different orientations of the Al2O3 substrate give different reactivity towards ZnO.

TUEp.SUR.22 16:30

Quantum Confined Stark Effects of Excitons in Wurtzite Nitride Semiconductor Quantum Dot — •Zu Wei Yan[1] and Lei Shi[2] — [1]College of Science, Inner Mongolia Agricultural University, Hohhot 010018, P. R. China — [2]Department of Physics, Inner Mongolia University, Hohhot 010021, P. R. China

Binding energies of excitons in wurtzite nitride quantum dot structures have been studied under an applied uniform electric field by taking the exciton with both branches of LO-like and TO-like interaction into account.

TUEp.SUR.23 16:30

Rotational disorder in few layer graphene films on 6H-SiC(000-1): A scanning tunneling microscopy study — •Pierre Mallet, François Varchon, Fanny Hiebel, Laurence Magaud, and Jean-Yves Veuillen — Institut Néel, C.N.R.S. and Université Joseph Fourier, Boîte Postale 166, F-38042 Grenoble Cedex 9, France

Scanning tunnelling microscopy was performed on few-layer graphene films epitaxially grown on SiC(000-1). Moiré patterns reveal a misorientation angle between the graphene layers, which yields to an electronic interlayer decoupling detected in our data.

TUEp.SUR.24 16:30

Emission properties of nanostructured surfaces of GaN and AlGaN — •Oleksandr Kyriienko[1], Anatoli Evtukh[1], Volodimir Litovchenko[1], Mykola Semenenko[1], Oktay Yilmazoglu[2], Hans Hartnagel[2], and Dimitris Pavlidis[2] — [1]Institute of Semiconductor Physics, 41 prospekt Nauki, 03028 Kiev, Ukraine — [2]Technische Universitadt Darmstadt, Institut fur Hochfrequenztechnik, Merckstr. 25, 64283 Darmstadt, Germany

Emission properties of nanostructured GaN and AlxGa1-xN(x=0.3) surfraces has been investigated in details. The nanostructured surface was formed by photoelectrochemical method. The effective electron field emission was observed and explained in frame of proposed model.

TUEp.SUR.25 16:30

The characterization of the energetic states localized on the GaSe syngle crystal - oxide layer surface — Igor Evtodiev, •Elmira Cuculescu, and Mihail Caraman — Faculty of Physics, Moldova State University, 60 A. Mateevici str., Chisinau, MD 2009, Republic of Moldova

GaSe oxidation by different processes causes new surface states formation. The ellipsometrical measurements at high incident angles of the reflection spectra in excitonic absorption region and thermoluminescence have been used for surface states properties analysis.

TUEp.SUR.26 16:30

Circular dichroism in photoemission as a fingerprint of surface band structure: The case of ZnSe(001)-c(2*2) — Vidal Franck[1], •Marangolo Massimiliano[1], Torelli Piero[2], Eddrief Mahmoud[1], Mulazzi Mattia[3], and Panaccione Giancarlo[3] — [1]INSP, Université Pierre et Marie Curie, Paris, France. — [2]INFM-CNR, National Research Centre for nanoStructures and bioSystems at Surfaces, Modena, Italy — [3]TASC Laboratory INFM-CNR, Trieste, Italy

Circular dichroism core and valence XPS measurements of the ZnSe(001)-c(2*2) surface indicate that surface and bulk components exhibit different polar variations. We identify experimentally surface-related bands in the valence-band spectra based on symmetry considerations.

TUEp.SUR.27 16:30

Nonequilibrium thermodynamics of Griffith crack propagation along interfaces — Robert Goldstein[1], Tariel Makhviladze[2], and •Mikhail Sarychev[2] — [1]Institute for Problems in Mechanics, Russian Academy of Sciences, Moscow, Russia — [2]Institute of Physics and Technology, Russian Academy of Science, Moscow,, Russia

In the work, using the methos of nonequilibrium thermodynamics, a criterion of quasistatic propagation of Griffith cracks is obtained. Both the cases of pure materials and materials containing point defects are considered.

TUEp.SUR.28 16:30

Orientation and characterization of anisotropic noble metal nanoparticles — •Waqqar Ahmed, Stefan Kooij, Arend van Silfhout, and Bene Poelsema — Solid State Physics, MESA+ Institute for Nanotechnology, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands

Electric field-induced orientation of suspended metallic nanorods is investigated using optical techniques. Calculation of nanorod optical properties using Mie theory and the Discrete Dipole Approximation provide a benchmark for in situ monitoring of alignment processes.

TUEp.SUR.29 16:30

Thermal relaxation of electrons due to acoustic-phonon interaction in a quantum wire — Arshak Vartanian[1], Anna Asatryan[1], •Lyudvig Vardanyan[2], and Albert Kirakosyan[1] — [1]Yerevan State University, Yerevan, Armenia — [2]Russian-Armenian University, Yerevan, Armenia

The hot-electron energy-loss rate conditioned by confined acoustic phonons in a quantum wire is

investigated theoretically. The comparison of our results with the experimental results obtained in acoustic phonon scattering regime shows a sufficient agreement.

TUEp.SUR.30 16:30

Indium adsorption and diffusion on In-rich (2x4) reconstructed InGaAs surfaces on GaAs(001) — •Marcello Rosini[1], Maria Clelia Righi[1], Rita Magri[1], and Peter Kratzer[2] — [1]CNR-INFM-S3 and Dipartimento di Fisica, Universita' di Modena e Reggio Emilia, Via Campi 213/A, Modena — [2]Fachbereich Physik, Universitat Duisburg-Essen, Germany

We have studied by DFT calculations and kMC simulations In diffusion on a InAs 1.75 ML thick wetting layer on GaAs(001) α2(2x4) and β2(2x4) reconstructed, where(2x4)are the reconstructions observed at the 2D to 3D transition.

TUEp.SUR.31 16:30

Change of Phase Composition and Electric Resistance of Si-Fe-Si System during Stationary Annealing — Vladimir Kolos[1], •Aleksey Malyshko[2], Victor Uhov[1], Arcady Chaplanov[2], and Elena Shcherbakova[2] — [1]Scientific Production Association Integral, 22 Kasinca St., Minsk, Belarus — [2]Physical-Technical Institute of National Academy of Sciences of Belarus10 Kuprevich St., Minsk, Belarus

The investigations of elemental composition and regularities of phase transformations in silicon-iron-silicon system have been investigated during stationary thermal annealing using electron diffractometry and Auger spectroscopy methods. The electrical resistivity of obtained thin film system was determined.

TUEp.SUR.32 16:30

Investigation of Regularities of Formation of Titanium and Molybdenum Nitrides on their Processing by Hydronitrogen Plasma of Arc Discharge — Arcady Chaplanov and •Elena Shcherbakova — Physical-Technical Institute of National Academy of Sciences of Belarus 10 Kuprevich St., 220141, Minsk, Republic of Belarus

Regularities of structural and phase transformations in titanium and molybdenum thin films irradiated with hydronitrogen plasma were investigated. Conditions of processing for formation of titanium and molybdenum nitride thin films were determined.

TUEp.SUR.33 16:30

Correlated stress-induced surface perturbation in foils made of amorphous alloys — •Alexandre Chmel, Vjacheslav Korsukov, Pavel Butenko, and Alexander Lukianenko — Ioffe Physico-Technical Institute, 26 Polytekhnicheskaya, St. Petersburg, Russia

The contribution has been withdrawn by the authors.

TUEp.SUR.34 16:30

Magnetoexciton-electron quantum transitions. Combined two-dimensional magnetoexciton-cyclotron resonance absorption band shape — Sveatoslav Moskalenko[1], Michael Liberman[2], •Igor Podlesny[1], Elena Kiselyova[3], Spiridon Russu[1], Florin Cerbu[3], Serghei Colun[3], and Olga Railean[3] — [1]Institute of Applied Physics, Chisinau, Republic of Moldova — [2]Uppsala University, Uppsala, Sweden — [3]Moldova State University, Chisinau, Republic of Moldova

The combined magnetoexciton-cyclotron resonance quantum transition was considered in case when the magnetoexciton is composed by the electron and hole on their Landau levels and the background electron takes part simultaneously in the quantum transition.

TUEp.SUR.35 16:30

Mechanisms of terahertz emission from carbon nanotubes — Konstantin Batrakov[1], Oleg Kibis[2], •Polina Kuzhir[1], Sergey Maksimenko[1], and Mikhail Portnoi[3] — [1]Belarus State University, Institute for Nuclear Problems, Minsk, Belarus — [2]Novosibirsk State Technical University, Novosibirsk, Russia — [3]School of Physics, University of Exeter, Exeter, UK

Physical mechanisms of the generation of terahertz electromagnetic waves in carbon nanotubes are investigated theoretically in order to reveal new possibilities of the design of novel nanotube-based light emitting and detecting devices.

TUEp.SUR.36 16:30

Processes of window formation and dissipation in nanocluster nonvolatile memory structures formed by ultra low energy ion implantation. — •Valerii Ievtukh[1], Viktor Turchanikov[1], Alexey Nazarov[1], Volodimir Lysenko[1], Pascal Normand[2], and Panagiotis Dimitrakis[2] — [1]Institute of Semiconductor Physics, 41 prospekt Nauki, Kyiv 03028, Ukraine — [2]Institute of Microelectronics, NCSR "Demokritos" 15310 Aghia Paraskevi, Greece

The window formation and charge retention processes in nonvolatile memory structures containing nanoclusters formed by ion implantation were investigated. The charge dissipation was explained by simultaneous accumulation of positive and negative charges during erase cycles.

TUEp.SUR.37 16:30

Size-dependent Super-piezoelectricity in Nanostructures — •Pradeep Sharma[1], Mohamed Majdoub[1], and Tahir Cagin[2] — [1]University of Houston — [2]Texas A&M University

Our atomistic calculations of a prototype nanostructure reveal emergence of size-dependent giant piezoelectricity in both non-piezoelectric and piezoelectric dielectrics e.g. a *giant* enhancement in the effective piezoelectric constant of nearly 500 % is found for BaTiO3 around 5 nm.

TUEp.SUR.38 16:30

Study of beta-SiC/SiO2 core-shell nanowires — •Giovanni Attolini, Francesca Rossi, Matteo Bosi, Bernard Enrico Watts, and Giancarlo Salviati — IMEM-CNR Institute Parco Area delle Scienze 37A, 43010 Parma (Italy)

SiC nanowires coated by an oxide shell were grown on Si and characterised by electron microscopy. Growth occurs along the <111> axis and planar defects (stacking faults, rotational twins) are evidenced on the (111) planes.

TUEp.SUR.39 16:30

Effects on Energetic Impact of Argon Clusters with Various Surfaces — •Vladimir Popok[1], Sasa Vuckovic[1], Eleanor Campbell[1,2], Juha Samela[3], and Kai Nordlund[3] — [1]Department of Physics, University of Gothenburg, 41296 Gothenburg, Sweden — [2]School of Chemistry, Edinburgh University, Edinburgh EH9 3JJ, Scotland — [3]Department of Physics, University of Helsinki, 00014 Espoo, Finland

The formation of surface nanostructures on impact of small and medium-size keV-energy inert gas clusters with various substrates is studied both experimentally and using molecular dynamics simulations. The relevant models are developed.

TUEp.SUR.40 16:30

Lattice distortions in Oxide Heterostructures — •Cosima Schuster[1] and Udo Schwingenschlögl[1,2] — [1]Institut für Physik, Universität Augsburg, D-86135 Augsburg, Germany — [2]ICCMP, Universidade de Brasilia, 70904-970 Brasilia-DF, Brazil

Electronic properties of $LaAlO_3/SrTiO_3$-heterostructures can be tuned by varying the surface-interface distance. Via DFT/GGA calculations we investigate the lattice-distortions at the interface as a function of the $LaAlO_3$-thickness, and the implications for the electronic structure.

TUEp.SUR.41 16:30

Ab initio modelling of surface and bulk oxide structures of PdPt alloys — •Arezoo Dianat[1], Nicola Seriani[2], Manfred Bobeth[1], Wolfgang Pompe[1], and Lucio Colombi Ciacchi[3] — [1]Institute for Materials Science, Dresden University of Technology, Hallwachsstrasse 3, 01069 Dresden, Germany — [2]Fakultaet Physik, Universitaet Wien, Sensengasse 8, 1090 Wien, Austria — [3]Fraunhofer Institut fuer Werkstoffmechanik, Woehlerstrasse 11, 79108 Freiburg, Germany

PdPt alloys are applied in catalysts for the combustion of methane. In this work, various structures of surface as well as of bulk oxides of PdPt alloys have been studied by means of density-functional theory.

TUEp.SUR.42 16:30

Photogalvanic effect in 2D asymmetric nanoarrays in presence of electron-electron interactions — Alexei Chepelianskii[1], Matvey Entin[2], •Lev Magarill[2], and Dima Shepelyansky[3] — [1]Univ. Paris-Sud, CNRS, UMR 8502, F-91405, Orsay, France — [2]Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, 630090, Russia — [3]Laboratoire de Physique Theorique, Universite Toulouse III, CNRS, 31062 Toulouse, France

Role of electron-electron interactions on the photogalvanic effect (PGE) in 2D lattice of asymmetric antidots is studied both analytically and numerically. We found that PGE tensor has different limits at low and high temperatures.

TUEp.SUR.43 16:30

Photoluminescence of strongly coupled J-aggregate microcavities — •Paolo Michetti[1] and Giuseppe La Rocca[2] — [1]Dipartimento di Fisica, Università di Pisa Largo Bruno Pontecorvo 3, 56127 Pisa, Italy. — [2]Scuola Normale Superiore and CNISM Piazza dei Cavalieri 7, 56126 Pisa, Italy.

We built a model able to account for the photo-excitation dynamics of a J-aggregate microcavity. We discuss the main relaxation channels that determine the microcavity photoluminescence and compare our numerical results with the experimental evidences.

TUEp.SUR.44 16:30

Tight binding description of the quantum confined Stark effect in strained Ge-rich quantum well systems — •Michele Virgilio and Giuseppe Grosso — NEST-CNR-INFM and Dipartimento di Fisica E. Fermi, Universita' di Pisa, Largo B. Pontecorvo 3, I-56127 Pisa, Italy

We investigate numerically the quantum confined Stark effect in Ge-rich SiGe quantum wells for different polarizations of the incident radiation. The evaluated absorption spectrum evidences the possibility of SiGe quantum wells as optical modulators.

TUEp.SUR.45 16:30

The adsorption of Tantalum at a Si(111)-7x7 surface — •Pingo Mutombo, Pavel Shukrinov, Martin Švec, Pavel Jelínek, and Vladimír Cháb — Institute of Physics,ASCR,vvi,Cukrovarnicka 10,16253 Prague 6,Czech republic

DFT calculations performed to determine the adsorption site of a Ta atom at a Si(111)-7x7 surface indicate that it favored the hollow site. Simulated STM images are dominated by a strong electronic effect.

TUEp.SUR.46 16:30

Nernst-Ettingshausen effect in layered conductors — •Olga Kirichenko[3], Olga Galbova[1], Raed Hasan[2], Danica Krstovska[1], and Valentin Peschansky[3] — [1]Faculty of Natural Sciences and Mathematics, Physical Institute, P.O.Box 162, 1000, Skopje, Republic of Macedonia — [2]Bir-Zeit University, West Bank, Autonomy of Palestine — [3]B.I.Verkin Institute for Low Temperature Physics and Engineering, National Academy of Sciences of Ukraine, 47 Lenin ave, Kharkov, 61103, Ukraine

Investigations of Nernst-Ettihgshausen effect in layered conductors with multisheet Fermi surface at different orientations of a quantizing magnetic field allows to determine electron energy spectrum and contributions to electron transport of different groups of carriers.

TUEp.SUR.47 16:30

Localized vs Charge-Transfer Excited States of Alizarin, Catechol and Polyacene Derivatives Adsorbed on TiO2 as Photosensitizers — Agnieszka Nawrocka[1], Agata Zdyb[2], and •Stanisław Krawczyk[1] — [1]Institute of Physics, Maria Curie-Skłodowska University, 20-031 Lublin, Poland — [2]Institute of Physics, Lublin Polytechnic, 20-618 Lublin, Poland

Electroabsorption measurements for dyes adsorbed on TiO2 nanoparticles are reported. They provide molecular dipole moment changes on excitation - a direct measure of electron delocalization into the solid. The involvement of charge-transfer states is assessed.

TUEp.SUR.48 16:30

Effect of magnetic field on optical anisotropy in strained CdZnSe/ZnSe Quantum Dots — Sheetal Kapoor, Jitendra Kumar, and •Pranay K Sen — Shri G. S. Institute of Technology & Science, 23 Park road, Indore-452003, India

Electronic and optical properties of ZnCdSe quantum dots is investigated using the Luttinger Hamiltonian formulation. The magnetic field dependence of energy eigenvalues and degree of linear polarization are analyzed for anisotropic quantum dots.

TUEp.SUR.49 16:30

Electron-electron scattering effect on spin-relaxation in many-valley semiconductor heterostructures — •Mikhail Glazov and Eugene Ivchenko — A.F. Ioffe Physico-Technical Institute, RAS, 194021 St-Petersburg, Russia

Dyakonov-Perel' spin relaxation mechanism is studied theoretically in a two valley quantum well. Electron-electron scattering rates governing this process are found to be different from those in a single valley system.

TUEp.SUR.50 16:30

Conductance eigenchannels, a case study: Pt atomic chains with impurities — •Alexander Smogunov[1,2,3], Gabriele Sclauzero[2,4], Andrea Dal Corso[2,4], and Erio Tosatti[1,2,4] — [1]International Centre for Theoretical Physics (ICTP), Strada Costiera 11, 34014 Trieste (Italy) — [2]Democritos-INFM, Unità di Trieste, Via Beirut 2/4, 34014 Trieste (Italy) — [3]Voronezh State University, University Sq. 1, 394006 Voronezh (Russia) — [4]International School for Advanced Studies (SISSA), Via Beirut 2/4, 34014 Trieste (Italy)

The analysis of ballistic transport in terms of conductance eigenchannels is implemented in the plane-wave code PWCOND and will be illustrated on the example of a Pt monatomic nanowire with various kinds of impurities.

TUEp.SUR.51 16:30

Thermal orientation of electron spins in nanostructures — •Sergey Tarasenko — A.F. Ioffe Physico-Technical Institute, 194021 St.Petersburg, Russia

It is shown that the spin orientation of free electrons occurs in low-symmetry semiconductor structures as soon as the electron gas is simply driven out of thermal equilibrium with the crystal lattice.

TUEp.SUR.52 16:30

Exact Numerical Calculation of the Electron Transmission Amplitude of a Correlated Quantum Dot: Few-particle vs. Mean-field Regime — •Andrea Bertoni[1] and Guido Goldoni[1,2] — [1]INFM-CNR S3 National Research Center, Modena, Italy — [2]Dipartimento di Fisica, Università di Modena e Reggio Emilia, Modena, Italy

The scattering amplitude of a model quantum dot containing few interacting electrons is calculated by using the "few-particle quantum transmitting boundary method". Fano resonances are found, where the transmission phase shows discontinuities.

TUEp.SUR.53 16:30

Microwave Assisted Tunneling through a Single Impurity in Si nanoMOSFET — •Enrico Prati, Rossella Latempa, and Marco Fanciulli — Laboratorio Nazionale MDM, CNR-INFM, via Olivetti 2 - 20041 Agrate Brianza - Italy

Photon assisted tunneling up to 40 GHz at 300 mK through a single As impurity in a nanoflash MOSFET is reported. Microwave power effects are observed as different conduction regimes and through excited states.

TUEp.SUR.54 16:30

Splitting of composite vortices due to boundary effects in mesoscopic two-gap superconductors — •Liviu Chibotaru and Vu Hung Dao — Division of Quantum and Physicsl Chemistry and INPAC, University of Leuven, Leuven, Belgium

In mesoscopic two-gap superconductors with sizes of the order of the coherence length noncomposite vortices are found to be thermodynamically stable in a large domain of the T - H phase diagram.

TUEp.SUR.55 16:30

Destruction of global coherence by long range modulations of disorder in superconducting nanocylinders — Vu Hung Dao and •Liviu Chibotaru — Division of Quantum and Physical Chemistry and INPAC, University of Leuven, Leuven, Belgium

In long superconducting nanocylinders the long-range modulation of the disorder is found to be responsible for the anomalous broadening and the multistep character of the resistive transition between normal and superconducting states in magnetic field.

TUEp.SUR.56 16:30

Bulk and surface waves in a 2d model of auxetic crystal — •Dariusz Twaróg[1], Dominik Trzupek[1,3], and Piotr Zieliński[1,2] — [1]The H.Niewodniczański Institute of Nuclear Physic PAN, ul. Radzikowskiego 152, 31-342 Kraków, Poland — [2]Cracow Technical University, Institute of Physic, 30-084 Kraków, Poland — [3]Jagiellonian University, Institute of Physic, ul. Reymonta 4, 30-059 Kraków, Poland

Model of polar auxeticism in external field is shown to exhibit complete stop acoustic band. Surface waves within bulk bands occur in it at specific surface parameters.

TUEp.SUR.57 16:30

Detecting quantized charge emission — •Janine Splettstoesser — Département de Physique théorique, Université de Genève, 24 quai Ernest Ansermet, CH-1211 Genève 4, Switzerland

We consider the dynamics of two mesoscopic cavities coupled in series by an edge state. We study the nonlinear response to periodic modulations, in particular the possibility of charge detection and joint interference effects.

TUEp.SUR.58 16:30

Symmetry breaking effect in the ferrocene electronic structure by hydrocarbon-monosubstitution: an experimental and theoretical study — •Alice Boccia[1], Andrea Giacomo Marrani[1], Stefano Stranges[1,2,3], Robertino Zanoni[1], Michele Alagia[2,3], Maurizio Cossi[4], and Maria Francesca Iozzi[4] — [1]Dipartimento di Chimica, Università degli Studi di Roma La Sapienza, piazzale Aldo Moro 5, I-00185 Rome, Italy — [2]ISMN-CNR, Sezione Roma1, Piazzale Aldo Moro 5, I-00185 Roma, Italy — [3]Laboratorio Nazionale TASC-CNR SS-14, Km 163.5, Basovizza, I-34012 Trieste, Italy — [4]Dipartimento di Scienze e Tecnologie Avanzate, Università del Piemonte Orientale, via V. Bellini 25/G, I-15100 Alessandria, Italy

A detailed experimental and theoretical study is offered of the HOMO electronic levels of a series of organometallic molecules which are deemed very suitable candidates for molecular electronics on silicon-based hybrids.

TUEp.SUR.59 16:30

Neutral and charged optical excitations of Carbon nanotubes: a theoretical approach — •David Kammerlander[1,2], Deborah Prezzi[1,2], Guido Goldoni[1,2], Filippo Troiani[1,2], and Ulrich Hohenester[3] — [1]CNR-INFM Research Center for nanoStructures and bioSystems at Surfaces (S3) — [2]Dipartimento di Fisica, Università di Modena e Reggio Emilia, Via Campi 213/A, 41100 Modena, Italy — [3]Institut für Physik, Karl–Franzens–Universität Graz, Universitätsplatz 5, 8010 Graz, Austria

We use a combined Quantum Monte Carlo, Direct Diagonalization and Tight-Binding approach to study the stability and optical signatures of excitons, trions, and bi-exciton in carbon nanotubes of arbitray chirality and diameter.

TUEp.SUR.60 16:30

Theory of Three-Body Features in Auger Core-Valence-Valence Line Shapes of Solids — •Michele Cini[1,2], Enrico Perfetto[2,3], Gianluca Stefanucci[1,2], and Simona Ugenti[1,2] — [1]Dipartimento di Fisica, Università di Roma "Tor Vergata", Via della Ricerca Scientifica 1, I-00133 Rome, Italy. — [2]Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali di Frascati, Via E. Fermi 40, 00044 Frascati, Italy. — [3]Dipartimento di Scienza dei Materiali, Università di Milano-Bicocca, Via Cozzi 53, 20125 Milano, Italy

We propose a closed formula for the shape of Coster-Kronig preceded Auger transitions covering the whole range between weak and strong correlations. The spectra are computed within an Anderson-like model evaluating a three-body Green's function.

TUEp.SUR.61 16:30

Dimensional dependence of self-trapping transition of acoustic polarons — Jun-Hua Hou and •Xi Xia Liang — Department of Physics, Inner Mongolia University, Hohhot 010021, China

The dependence of the self-trapping of acoustic polarons on the dimensionality is analyzed by a criterion. The results show that the self-trapping of acoustic polarons is more easily to be observed in lower dimensionalities.

TUEp.SUR.62 16:30

Periodic nanostructure in conducting polymer polyaniline — Boris Mironov, •Sergei Aseyev, and Sergei Chekalin — Institute of Spectroscopy, Russian Acad. Of Sc., 142190 Troitzk, Moscow region

A photoelectron image of a fragment of polyaniline has been obtained with the aid of laser photoelectron projection microscope. The periodic nanostructure with a period of about 5 nm have been observed.

TUEp.SUR.63 16:30

Charge spectroscopy of the silicon nanocrystals embedded in a dielectric matrix — •Irina Antonova[1], Efim Neustroev[2], Svetlana Smagulova[2], Jedrzej Jedrzejewski[3], and Isaac Balberg[3] — [1]Institute of Semiconductor Physics, SB RAS, Novosibirsk, Lavrentieva 13, Russia — [2]Yakutsk State University, Yakutsk. Belinskogo 58, Russia — [3]Racah Institute of Physics, The Hebrew University, Jerusalem 91904, Israel

The charge deep level transient spectroscopy was applied to test a recharging of nanocrystals in a dielectric matrix and to extract information about the quantum confinement levels, the nanocrystal size and concentration.

TUEp.SUR.64 16:30

Electronic Transport Properties of Thermal Oxidized Nanolayered Zn/In Thin Films — •George Rusu and Mihaela Rusu — Al.I. Cuza University, Facuty of Physics, Carol I Blvd., No. 11, 700506-Iasi, Romania

By heating in air up to 550 K of evaporated Zn/In multilayered thin films, In-doped ZnO films were obtained. A comparative study of electrical properties both of In-doped and non-doped ZnO thin films was performed.

TUEp.SUR.65 16:30

A nontrivial behavior of the resonant tunneling current along the tip sample distance on semiconductor surfaces — •Pavel Jelínek[1], Martin Švec[1], Pablo Pou[2], Ruben Pérez[2], and Vladimír Cháb[1] — [1]Institute of Physics of the ASCR, Curkrovarnická 10, CZ-162 00 Prague, Czech Republic — [2]Departamento de Física Teórica de la Materia Condensada, Universidad Autónoma de Madrid, 28049 Madrid, Spain

We combine STM measurements and theoretical calculations of the electron currents to clarify the mechanism of the resonant tunneling through surface states of Si adatoms on the Si(111)-(7x7) surface.

Aula Magna

9:00 – 11:00

WED1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties of Insulating and Magnetic Interfaces

Chair: Valentina DeRenzi, Universita' di Modena e Reggio Emilia and CNR-INFM S3, Modena, Italy

WED1M.1 (Invited) 9:00

Scanning tunneling spectroscopy of molecular donor-acceptor assemblies — •Jose Ignacio Pascual, Isabel Fernandez-Torrente, and Katharina Franke — Institut für Experimentalphysik, Freie Universität Berlin, Arnimallee 14, Berlin D-14195

We investigate the interaction of thin films of the organic charge transfer compound TTF-TCNQ on a Au(111) surface by scanning tunnelling spectroscopy to resolve their charge state at the surface, and the interface band structure.

WED1M.2 9:40

MgO thin film on Au(111): a stable polar surface? — •Stefania Benedetti[1], Piero Torelli[1], Sergio Valeri[1,2], Philipp Myrach[3], Niklas Nilius[3], Hans-Joachim Freund[3], and Gilles Renaud[4] — [1]CNR-INFM S3, Via G. Campi 213/a, I-41100 Modena, Italy — [2]Department of Physics, University of Modena and Reggio Emilia, Via G. Campi 213/a, I-41100 Modena, Italy — [3]Fritz-Haber-Institut der Max-Planck-Gesellschaft, Faradayweg 4-6, D-14195 Berlin, Germany — [4]CEA-Grenoble, Département de Recherche Fondamentale sur la Matiére Condensée/SP2M/IRS, 17 rue de Martyrs, 38054 Grenoble, France

Structural and morphological evolution of thin MgO film on Au(111) have been investigated as a function of growth parameters. MgO shows a rocksalt polar hexagonal (111) surface above 200°C, in spite of its expected instability.

WED1M.3 10:00

Water adsorption on MgO nanocrystals: simulations and experiments — •Fabio Finocchi, Pascale Geysermans, Jacek Goniakowski, Jacques Jupille, and Slavica Stankic — Institut des NanoSciences de Paris (INSP), Paris, France

Water interaction with prototypical oxide (MgO) nanocrystals is systematically investigated as a function of water pressure and surface morphol-

Aula Amaldi

9:00 – 11:00

WED1A: Semiconductor Physics - Quantum Effects in Low-Dimensional Systems

Chair: T.Ihn, ETH Zurich, Zurich, Switzerland

WED1A.1 (Invited) 9:00

An Electron Molecule in a Quantum Dot: Theory and Inelastic Light Scattering Experiments — •Massimo Rontani — CNR-INFM Research Center S3, Modena, Italy

We report the emergence of roto-vibrational modes of a molecular state of correlated electrons in a quantum dot. This relies on a joint experimental and theoretical investigation of the neutral excitations of the electrons.

WED1A.2 9:40

Microwave induced magnetism in isolated quantum dots. — •Alexei Chepelianskii[1], Sophie Guéron[1], Hélène Bouchiat[1], Frédéric Pierre[2], Ulf Gennser[2], and Antonella Cavanna[2] — [1]Univ. Paris-Sud, CNRS, UMR 8502, F-91405, Orsay, France — [2]LPN-CNRS, route de Nozay, 91460 Marcoussis, France

We investigate experimentally the interaction between a Bunimovich billiard under microwave irradiation and a high mobility Hall bar set up. Our results suggest that strong magnetic fields up to several Gauss can be created near the stadium.

WED1A.3 10:00

Experimental Test of the Dynamical Coulomb Blockade Theoryfor Short Coherent Conductors — •Carles Altimiras, Hélène le Sueur, Ulf Gennser, Antonella Cavanna, Dominique Mailly, and Frédéric Pierre — Laboratoire de Photonique et de Nanostructures, (LPN)-C.N.R.S, Marcoussis, France

By measuring the Coulomb corrections on the re-

Aula Conversi

9:00 – 11:00

WED1C: Joint Biological Physics & Life Sciences and Polymer Physics VI

Chair: M. Weik, Institut de Biologie Structurale CEA-CNRS-UJF, Grenoble, France

WED1C.1 (Invited) 9:00

Supramolecular plastics and self-healing rubbers — •Ludwik Leibler — Matière Molle et Chimie, ESPCI, UMR 7167, Paris, France

We will discuss how to harness small molecules to exhibit polymer-like properties thanks to directional interactions and supramolecular chemistry. We show that thus obtained supramolecular rubbers can show amazing self-healing properties.

WED1C.2 (Invited) 9:40

Protein-Ligand Interactions in Heme Proteins — •Gerd Ulrich Nienhaus[1,2] and Karin Nienhaus[1] — [1]Institute of Biophysics, University of Ulm, 89069 Ulm, Germany — [2]Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

Heme proteins are model systems for studying structure-dynamics-function relationships in proteins. The combination of X-ray crystallography and optical/infrared spectroscopy has provided detailed insights into protein-ligand interactions and the ligand binding reaction in these proteins.

Aula 1

9:00 – 11:00

WED1F1: Materials - Pairing Symmetry and Lattice Effects in Superconductors

Chair: A. Bussmann-Holder, Max-Planck-Institut, Stuttgart, Germany

WED1F1.1 (Invited) 9:00

Early signatures of s and d symmetries in high temperature superconducting copper oxides — •K. Alex Müller — Physik Institut der Universität Zürich, Winterthurerstr. 190, CH-8057 Zürich, Switzerland

An introduction to the properties of s - and d - wave gap symmetries in high temperature copper oxide superconductors is given.

WED1F1.2 9:40

Admixture of an s-wave component to the d-wave gap symmetry in high-temperature superconductors — •Albert Furrer — Laboratory for Neutron Scattering, ETH Zurich & PSI Villigen, CH-5232 Villigen PSI, Switzerland

The relaxation behavior of crystal-field transitions in rare-earth based high-temperature superconductors is studied by neutron crystal-field spectroscopy. The data analysis is consistent with a mixed gap function of d-wave (75%) and s-wave (25%) symmetry.

WED1F1.3 10:00

Universal observation of multiple order parameters in cuprate superconductors — •Rustem Khasanov[1], Alexander Shengelaya[2], Alexander Maisuradze[3], Daniele Di Castro[3], Simon S. Straessle[3], Fabio La Mattina[3], Janusz Karpinski[4], Nikolai Zhigadlo[4], Takahiko Masui[5], Shigeki Miyasaka[5], Setsuko Tajima[5], Annette Bussmann-Holder[6], Hugo Keller[3], and Karl Alex Muller[3] — [1]Laboratory for Muon Spin

Wednesday

Aula 3

9:00 – 11:00

WED1F3: Magnetism - Magnetoelectronics III

Chair: M. Klaüi, University of Konstanz, Germany

WED1F3.1 (Invited) 9:00

Ferromagnetic GaN by rare earth implantation — •Andreas Wieck — Lehrstuhl für Angewandte Festkörperphysik, Ruhr-Universität Bochum, D-44780 Bochum, Germany

In the two-dimensional electron gas of GaN heterostructures, focussed Gd ion beams are implanted to a concentration of 1016cm-3. The GaN:Gd becomes ferromagnetic, maintaining its electronic conduction. At T=4.2K, extraordinary Hall effect is observed.

WED1F3.2 9:40

Role of the interface morphology in the exchange-spring behavior of perpendicular FePt/Fe bilayers — Francesca Casoli, •Franca Albertini, Lucia Nasi, Simone Fabbrici, Riccardo Cabassi, Fulvio Bolzoni, and Claudio Bocchi — Istituto IMEM del CNR, Parma, Italy

Exchange-coupled perpendicular systems are very promising as next generation recording media with high thermal stability and reduced switching fields. These properties have been optimized in FePt/Fe perpendicular bilayers by exploiting the role of interface morphology.

WED1F3.3 10:00

Effects of atomic H on the magnetic behavior of the Co-doped TiO2 (anatase) semiconductor. — •Francesco Filippone[1], Giuseppe Mattioli[1,2], Paola Alippi[1], and Aldo Amore Bonapasta[1] — [1]Istituto di Struttura della Materia (ISM) - CNR, Via Salaria Km. 29.5, CP 10, 00016 Monterotondo Stazione, Italy — [2]Dipartimento di Chimica, Università di Roma La Sapienza, P.le A.Moro 2, 00185 Roma, Italy

Aula 4

9:00 – 11:00

WED1F4: Superconductivity and Highly-Correlated Systems - Quantum Spin Systems and Spectroscopy I

Chair: M. Shi, Paul Scherrer Institut, Villigen, Switzerland

WED1F4.1 (Invited) 9:00

Neutron Experiments in Quantum Spin Systems — •Henrik Ronnow — Laboratory for Quantum Magnetism, Ecole Polytechnique Federale de Lausanne, Switzerland

The potential of neutron scattering investigations of quantum spin systems and correlated electron materials is illustrated by selected recent results including spin chains, ladders and planes.

WED1F4.2 9:40

Magnetic excitations and feedback resonances in anisotropic superconductors — •Peter Thalmeier[1], Jun Chang[2], Ilya Eremin[2], David Parker[2], and Peter Fulde[1] — [1]Max Planck Institute for Chemical Physics of Solids, 01187 Dresden, Germany — [2]Max Planck Institute for the Physics of Complex Systems, 01187 Dresden

Superconducting feedback effect on magnetic excitations in unconventional heavy fermion superconductors UPd2Al3, CeCoIn5 and CeCu2Si2 leads to resonance formation in inelastic neutron scattering. Enhancement of Tc in (Pr,La) skutterudite superconductor is due to quadrupolar excitations.

WED1F4.3 10:00

Gap anisotropy in CaC_6: evidence from directional point-contact Andreev-reflection spectroscopy — •Mauro Tortello[1], Renato S. Gonnelli[1], Dario Daghero[1], Debora Delaude[1], Giovanni A. Ummarino[1], Valeri A. Stepanov[2], Jun Sung Kim[3], Reinhard K. Kremer[3], Antonio Sanna[4], and Sandro Massidda[5] — [1]Dipartimento di Fisica and CNISM, Politecnico di Torino, Cso. Duca degli Abruzzi 24, 10129 Torino, Italy — [2]P.N. Lebedev

Aula 6

9:00 – 11:00

WED1F6: Liquids, Disordered and Off-Equilibrium Systems - Supercooled Liquids and Glass Transition

Chair: J. Kurchan, Laboratoire de Physique et Mécanique des Milieux Hétérogènes, CNRS, Paris, France

WED1F6.1 (Invited) 9:00

"Strong pressure-energy correlations in the thermal equilibrium fluctuations of model liquids: Cause and consequences" — •Jeppe C. Dyre, Ulf R. Pedersen, Nicholas Bailey, and Thomas B. Schrøder — Roskilde University, Denmark

Strong correlations between equilibrium fluctuations of the configurational parts of pressure and energy are found in the Lennard-Jones liquid and other van der Waals type liquids, but not in hydrogen-bonding liquids like methanol and water.

WED1F6.2 9:40

Universal Scaling Between Relaxation and Caged Dynamics in Glass-Forming Liquids, Polymers and Mixtures — Alistar Ottochian[1], Cristiano De Michele[2,3], and •Dino Leporini[1,3] — [1]Dipartimento di Fisica "Enrico Fermi", Universita' di Pisa, Largo B. Pontecorvo 3, I-56127 Pisa, Italy — [2]Dipartimento di Fisica, Universita' di Roma "La Sapienza", Piazzale Aldo Moro, 2, 00185 Rome, Italy — [3]INFM-CRS Soft, Piazzale Aldo Moro 2, 00185 Roma, Italy

We show simulations and experiments revealing the universal correlation of the structural relaxation time and the vibrational amplitude when the former increases from a few picoseconds to thousands of seconds through the glass transition.

WED1F6.3 10:00

Thermodynamic signature of growing amorphous order in glass-forming liquids — Giulio Biroli[1], Jean-Philippe Bouchaud[2], Andrea Cavagna[3], Tomas Grigera[4], and •Paolo Verrocchio[5] — [1]CEA, DSM, Institut de Physique Théorique, IPhT, CNRS, MPPU, URA2306, Saclay, F-91191 Gif-sur-Yvette, France. — [2]Science & Finance, Capital Fund Management, 6 Bd Haussmann, 75009 Paris, France. — [3]Centre for Statistical Mechan-

Wednesday

ogy, including defects. Particle shapes and adsorbate configurations are unraveled by combining experiments (infrared, TEM) with DFT.

sistance of a Quantum Point Contact embedded in a tunable electromagnetic environment we have tested quantitatively the recent theory of Dynamical Coulomb Blockade for short coherent conductors.

Spectroscopy, Paul Scherrer Institut, CH-5232 Villigen PSI, Switzerland — [2]Physics Institute of Tbilisi State University, Chavchavadze 3, GE-0128 Tbilisi, Georgia — [3]Physik-Institut der Universität Zürich, Winterthurerstrasse 190, CH-8057 Zürich, Switzerland — [4]Laboratory for Solid State Physics, ETH Zürich, CH-8093 Zürich, Switzerland — [5]Department of Physics, Osaka University, Machikaneyama 1-1, Toyonaka, Osaka 560-0043, Japan — [6]Max-Planck-Institut für Festkörperforschung, Heisenbergstrasse 1, D-70569 Stuttgart, Germany

The temperature dependence of the superfluid density was determined for three cuprate families. The results disclose generic trends for HTS's, namely the $s+d-$wave gap in CuO_2 planes and $s-$wave gap along the c-axis

WED1M.4 10:20

Competing anisotropies in $Fe_{81}Ni_{19}$/Co superlattices — •Hartmut Hafermann[1], Rimantas Brucas[2], Inna L. Soroka[3], Mikhail I. Katsnelson[4], Olle Eriksson[2], and Björgvin Hjörvarsson[2] — [1]I. Institute of Theoretical Physics, University of Hamburg, 20355 Hamburg, Germany — [2]Department of Physics, Uppsala University, Box 530, 751 21 Uppsala, Sweden — [3]Department of Materials Chemistry, Uppsala university, Box 576, 751 23 Uppsala, Sweden — [4]Institute for Molecules and Materials, Radboud University of Nijmegen, 6525 AJ Nijmegen, The Netherlands

A magnetization reorientation transition has been observed in $Fe_{81}Ni_{19}$/Co superlattices. Our calculations identify it as being due to the competition between in-plane interface and bulk out-of-plane anisotropies, the latter being caused by tetragonal distortions.

WED1A.4 10:20

All-Optical Approaches to Quantum Computing Using Spin Qubits — •Brendon Lovett[1], Erik Gauger[1], Ahsan Nazir[2], Peter Rohde[1], Marshall Stoneham[2], and Simon Benjamin[1] — [1]Department of Materials, University of Oxford, Parks Rd, Oxford OX1 3PH U. K. — [2]Department of Physics and Astronomy, University College London, London WC1E 6BT, U. K.

Quantum computers could revolutionize information technology, and electron spins in semiconductor quantum dots (QDs) are preferred quantum information carriers. I will show how quantum logic gates can be built in a range of QD systems.

WED1C.3 10:20

Key role of proximal water in regulating thermostable proteins — Fabio Sterpone[1], Claudia Bertonati[2], •Giuseppe Briganti[3], and Simone Melchionna[3] — [1]Caspur, Rome, Italy — [2]Dep. Biochem. Sci. University La Sapienza,IT-60131 Rome, Italy — [3]Dep. Phys. Soft University La Sapienza,IT-60131 Rome, Italy

Three homologous proteins, with mesophilic, thermophilic and hyperthermophilic character, have been studied via Molecular Dynamics simulations at different temperatures. The water-water hydrogen bond clusters enveloping the macromolecule correlate with thermal of the three proteins.

WED1F1.4 10:20

Unconventional Isotope Effects in Cuprate Superconductors — •Hugo Keller — Physik-Institut der Universität Zürich, Winterthurerstrasse 190, Ch-8057 Zürich, Switzerland

Unconventional oxygen-isotope effects in cuprate superconductors on various quantities, including the transition temperature, the gap, the penetration depth, the pseudogap temperature, the antiferromagnetic transition temperature, and the spin-glass freezing temperature, are presented.

WED1M.5 10:40

Magnetic properties of single nanoislands studied by in-field spin-STM — •Dirk Sander, Guillemin Rodary, Sebastian Wedekind, and Jürgen Kirschner — Max Planck Institute of Microstructure Physics, Halle, Germany

The magnetic response of nm-small individual Co islands in magnetic fields of up to 6 T is discussed based on our results of spin-polarized scanning tunnelling microscopy (STM) studies at 7 K.

WED1A.5 10:40

Environment interaction induced breaking of the Onsager symmetry — •David Sanchez — Departament de Fisica, Universitat de les Illes Balears, E-07122 Palma de Mallorca, Spain

The Onsager relations applied to mesoscopic transport states that the conductance is even under magnetic field reversal. We find breakings of this symmetry when the system interacts with an enviroment out of equilibrium.

WED1C.4 10:40

Protein-DNA interactions: reaching and recognizing the targets — •Andrey Cherstvy[1], Anatoly Kolomeisky[2], and Alexei Kornyshev[3] — [1]Institut für Festkörperforschung, Theorie-II, Forschungszentrum Jülich, D-52425 Jülich, Germany — [2]Department of Chemistry, Rice University, Houston, Texas 77005, USA — [3]Department of Chemistry, Faculty of Natural Sciences, Imperial College London, SW7 2AZ,

WED1F1.5 10:40

What do NMR data tell us about the symmetries of pairing and spin fluctuations in cuprates? — •Peter F. Meier — Physik-Institut, University of Zurich, Winterthurerstr. 390, CH-8057 Zurich, Switzerland

The temperature dependence of NMR data in the superconducting state provide information about the pairing symmetry. Several previously reported analyses are re-examined. The symmetry of spin

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The origin of ferromagnetism in the Co-doped TiO2 semiconductor has been clarified by performing a beyond DFT study of Co interstitials, oxygen vacancies (VO), Co-VO complexes, and complexes formed by Co and atomic H.

WED1F3.4 10:20

Uniaxial anisotropy and temperature driven magnetization reversal of Fe deposited on a MnAs/GaAs(001) magnetic template. — •Massimiliano Marangolo[1], Sacchi Maurizio[2,3], Breitwisier Romain[1,2], Spezzani Carlo[4], Milano Julian[5], Etgens Victor[1], Lüning Jan[2], Jaouen Nicolas[3], and Coelho Laetitia[6] — [1]INSP, Université Pierre et Marie Curie, Paris, France. — [2]Laboratoire de Chimie Physique - Matière et Rayonnement, UPMC - Univ.Paris 6, Paris, France. — [3]Synchrotron SOLEIL, Paris, France. — [4]Sincrotrone Trieste S.C.p.A, Trieste, Italy. — [5]Centro Atómico Bariloche and Instituto Balseiro-UNCuyo, CNEA, Bariloche, Argentina. — [6]Universidade Federal de Minas Gerais, Minas Gerais, Brazil

MnAs/GaAs (001) presents ordered stripes alternating ferromagnetic/paramagnetic micrometric domains (10°C and 40°C). Iron grown above this structures presents a complex ferro/antiferro temperature dependent coupling as shown by resonant x-ray magnetic scattering and XPEEM experiments.

WED1F3.5 10:40

X-ray scattering with angle and energy resolution and electronic excitations in transition-metal magnetic ions and elemental transition metals. — •Ivan Marri[1], Carlo Maria Bertoni[1], and Paolo Ferriani[2] — [1]INFM-CNR, National Research Center on nanoStructures and bioSystems at Surfaces S3, CNISM - Consorzio Nazionale Interuniversitario per le Scienze Fisiche della Materia and Dipar-

Aula 4

Physical Institute, Russian Academy of Sciences, 119991 Moscow, Russia — [3]Max-Planck-Institut für Festkörperforschung, D-70569 Stuttgart, Germany — [4]Institut für Theoretische Physik, Freie Universität Berlin, D-14195 Berlin, Germany — [5]SLACS-INFM/CNR and Dipartimento di Fisica, Università degli Studi di Cagliari, 09042 Cagliari

We present the first experimental evidence of gap anisotropy in the novel superconductor CaC_6, obtained by means of point-contact Andreev-reflection spectroscopy. Results are in good agreement with theoretical curves calculated from first principles.

WED1F4.4 10:20

Unexpected effects of Li doping in MgB_2 — •Dario Daghero[1], Mauro Tortello[1], Debora Delaude[1], Giovanni Alberto Ummarino[1], Renato S. Gonnelli[1], Valeri A. Stepanov[2], Marina Putti[3], and Janusz Karpinski[4] — [1]CNISM and Dipartimento di Fisica, Politecnico di Torino - corso Duca degli Abruzzi 24, 10129 Torino (TO) - Italy — [2]P.N. Lebedev Physical Institute, Russian Academy of Sciences, 119991 Moscow, Russia — [3]CNR-INFM-LAMIA and Dipartimento di Fisica, Università di Genova, 16146 Genova, Italy — [4]Solid State Physics Laboratory, ETH, CH-8093 Zürich, Switzerland

We present some unexpected effects of lithium doping on the gaps of MgB_2, as evidenced by point-contact Andreev-reflection measurements. The results are discussed within the two-band Eliashberg theory for superconductivity.

WED1F4.5 10:40

Determining current fluctuations through a Josephson junction with very short current pulses — •Fabio Taddei[1] and Frank W. J. Hekking[2] — [1]NEST CNR-INFM and Scuola Normale Superiore, I-56126 Pisa, Italy — [2]University Joseph Fourier and LPMMC-CNRS, B.P. 166, 25 Avenue des Martyrs, 38042 Grenoble-cedex 09, France

We show that distribution of current fluctuations

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ics and Complexity (SMC), CNR-INFM, Via dei Taurini 19, 00185 Roma, Italy. — [4]Instituto de Investigaciones Fisicoquímicas Teóricas y Aplicadas (INIFTA – CCT La Plata — [5]Department of Physics, University of Trento, Italy

Studying the evolution of the influence of boundary conditions into the bulk when cooling a simple glass model, we reveal a qualitative thermodynamic difference between high temperature liquids and deeply supercooled equilibrium glass formers.

WED1F6.4 10:20

Reentrant Glass Transition in the Repulsive Step System — •Yury Fomin — HPPI RAS, Russia

We present the study of anomalous behavior of repulsive step potential system. The phase diagram demonstrates a region with reentrant glass transition which could be explained by quasi-binary nature of the system.

WED1F6.5 10:40

Brittle Fracture of Viscoelastic Fluids — •Serge Mora, Christian Ligoure, Gregoire Porte, and Herve Tabuteau — Laboratoire des Colloïdes, Verres et Nanomatériaux. UMR 5587. CNRS-Université de Montpellier 2. Place E.Bataillon. 34095 Montpellier. France.

We present experiments on fractures in viscoelastic fluids. Critical stresses and failure times have been measured. Due to the self-healing nature of

11:00 – 11:30: Coffee Break

11:30 – 12:50

WED2M: Surface, Interface and Low-Dimensional Physics - Adsorption and Nanopatterning

Chair: M. Getzlaff, University of Düsseldorf, Düsseldorf, Germany

WED2M.1 11:30

Atomic relaxations and magnetic anisotropy in self-ordered Co nanodots surrounded by Au atoms — Nahas Y[1], Repain V[1], Bulou H[2], Goyhenex C[2], Rohart S[3], Chacon C[1], Girard Y[1], Lagoute J[1], Rodary G[1], and •Rousset S[1] — [1]MPQ CNRS University Paris Diderot, Paris, France — [2]IPCMS CNRS University of Strasbourg, Strasbourg, France — [3]LPS CNRS University Paris Sud, Orsay, France

We investigate the magnetic anisotropy of self-ordered Co nanodots deposited on Au(111) which are surrounded by Au atoms in a core-shell structure. We correlate the results with the chemical environment of the cobalt atoms.

WED2M.2 11:50

Pt_xCe_{1-x} Surface Alloys on Pt(111): Structure and Adsorption — •Jan Markus Essen, Conrad Becker, and Klaus Wandelt — Institute of Physical and Theoretical Chemistry, University of Bonn, Wegelerstr. 12, D-53115, Bonn, Germany

New Pt_xCe_{1-x} surface alloys on Pt(111) have been discovered with LEED. Independent of their stoichiometry all alloy films are terminated by a pure Pt Kagomé-net as concluded from HREELS- and TPD- spectra from adsorbed gases.

11:00 – 11:30: Coffee Break

11:30 – 12:50

WED2A: Semiconductor Physics - Quantum Cascade Lasers

Chair: W. Wegscheider, Universität Regensburg, Regensburg, Germany

WED2A.1 (Invited) 11:30

THz transfer on an optical carrier — •Carlo Sirtori, Sukhdeep Dhillon, and Stefano Barbieri — Laboratoire MPQ, Université Paris Diderot, 75013 Paris, France

Phase and amplitude of a frequency modulated THz quantum cascade laser have been recorded on a telecom beam using a nonlinear process. This experiment demonstrates the merging of THz lasers with microwave and telecom technologies.

11:00 – 11:30: Coffee Break

11:30 – 12:50

WED2C: Joint Biological Physics & Life Sciences and Polymer Physics VII

Chair: K. Nienhaus, University of Ulm, Ulm, Germany

WED2C.1 (Invited) 11:30

The coupling between hydration-water and protein dynamics — Kathleen Wood[1,2], Douglas Tobias[3], Giuseppe Zaccai[2], and •Martin Weik[1] — [1]Institut de Biologie Structurale CEA-CNRS-UJF, 41 rue Jules Horowitz, 38027 Grenoble Cedex 1, France — [2]Institut Laue-Langevin, 6 rue Jules Horowitz, B.P. 156, 38042 Grenoble Cedex 9, France — [3]Department of Chemistry, University of California, Irvine, California, USA

A combination of neutron scattering, perdeuteration and molecular dynamics simulations revealed that soluble-protein dynamics and their hydration-water are strongly coupled, whereas the dynamics of membrane proteins is rather controlled by their lipid environment.

London, UK

We investigate theoretically facilitated protein diffusion along coiled DNA and suggest a mechanism of DNA-protein electrostatic recognition based on charge complementarity on their surfaces. We analyze electrostatic potential distribution on DNA-protein complexes using PDB data.

11:00 – 11:30: Coffee Break

11:30 – 12:50

WED2F1: Materials - Domains and Textures

Chair: I. Giardina, Università La Sapienza, Roma, Italy

WED2F1.1 (Invited) 11:30

Dislocation avalanches, strain bursts, and the problem of plastic forming at the micron scale — Ferenc Csikor[1], Christian Motz[2], Daniel Weygand[2], Michael Zaiser[3], and •Stefano Zapperi[4] — [1]Eotvos University, Budapest, Hungary — [2]Universität Karlsruhe, Germany — [3]University of Edinburgh, UK — [4]CNR-INFM, S3, Modena, Italy

Combining three-dimensional simulations of the dynamics of interacting dislocations with statistical analysis of the corresponding deformation behavior, we determine the distribution of strain changes during dislocation avalanches and establish its dependence on microcrystal size.

fluctuations drastically changes between normal and superconducting states.

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timento di Fisica, Università di Modena e ReggioEmilia, Via Campi 213/A, I-41100 Modena, Italy — [2]Institute of Applied Physics and Microstructure Research Center, University of Hamburg, Jungiusstrasse 11, D-20355 Hamburg, Germany.

We present angle- and polarization-resolved RIXS for Ni and compounds, calculated with different methods: a) single-ion many-electron model, b) one-electron multiple-scattering approach, c) detailed band-calculations. We confirm the possibility to observe a crucial anisotropy.

11:00 – 11:30: Coffee Break

11:30 – 12:50

WED2F3: Magnetism - Magnetic thin Films

Chair: J. Vogel, Institut Neel, CNRS/UJF, Grenoble, France

WED2F3.1 11:30

Magnetic anisotropy of single atoms and clusters of Fe and Co on Pt(111) — •Timofey Balashov[1], Tobias Schuh[1], Albert F. Takács[1], Sergey Ostanin[2], Arthur Ernst[2], Jürgen Henk[2], Toshio Miyamachi[3], Shigemasa Suga[3], and Wulf Wulfhekel[1] — [1]Physikalisches Institut, Universität Karlsruhe, Wolfgang-Gaede-Str. 1, 76131, Karlsruhe, Germany — [2]Max-Plank-Institut für Mikrostrukturphysik, Weinberg 2, 06120 Halle, Germany — [3]Graduate School of Engineering Science, Osaka University, Toyonaka, Osaka 560-8531, Japan

Magnetic anisotropy of individual Fe and Co atoms, as well as dimers and trimers on a Pt(111) surface was investigated using inelastic scanning tunneling spectroscopy. The results are compared to theoretical calculations.

WED2F3.2 11:50

High resolution imaging of domain walls and vortex cores in ferromagnetic nanostructures — •Mathias Kläui[1], Olivier Boulle[1], Johannes Kimling[1], Ulrich Rüdiger[1], and Giancarlo Faini[2] — [1]Fachbereich Physik, Universität Konstanz, 78457 Konstanz, Germany — [2]LPN-CNRS, Marcoussis, France

We obtain high-resolution images of the spin structure of domain walls in in-plane and out-of-plane magnetized samples, which allows us to determine the wall type and the wall width for different structure geometries and materials.

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can be measured by means of the escape probability histogram of a Josephson junction obtained using very short bias current pulses in the adiabatic regime.

11:00 – 11:30: Coffee Break

11:30 – 12:50

WED2F4: Superconductivity and Highly-Correlated Systems - Quantum Spin Systems and Spectroscopy II

Chair: H. Ronnow, Ecole Polytechnique Fédérale, Lausanne, Switzerland

WED2F4.1 11:30

Multi-photon Transitions in the System of Coupled Superconducting Flux Qubits — •Sergey Shevchenko[1], Simon van der Ploeg[2], Miroslav Grajcar[2,3], Evgeniy Il'ichev[2], Alexandr Omelyanchouk[1], and Hans-Georg Meyer[2] — [1]B.Verkin Institute for Low Temperature Physics and Engineering, 47 Lenin Ave., 61103, Kharkov, Ukraine — [2]Institute of Photonic Technology, P.O. Box 100239, D-07702 Jena, Germany — [3]Department of Experimental Physics, Comenius University, SK-84248 Bratislava, Slovakia

The multi-photon resonant excitations in both single and two coupled flux qubits are investigated. In particular, we discuss the spectroscopy measurements, Landau-Zener interferometry, and the multiphoton fringes in the system.

WED2F4.2 11:50

Fully Frustrated Josephson Junction Arrays With Non Trivial Geometry As Topologically Protected Qubits — Gerardo Cristofano[1], Vincenzo Marotta[2], •Adele Naddeo[3], and Giuliano Niccoli[4] — [1]Dipartimento di Scienze Fisiche, Università di Napoli "Federico II" and Istituto Nazionale di Fisica Nucleare, Sezione di Napoli, C. U. Monte S. Angelo, Via Cinthia, IT-80126 Napoli, Italy — [2]Dipartimento di Scienze Fisiche, Università di Napoli "Federico II" and Istituto Nazionale di Fisica Nucle-

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the cracks, the fracture can be explained in terms of thermally activated fracture.

11:00 – 11:30: Coffee Break

11:30 – 12:50

WED2F6: Liquids, Disordered and Off-Equilibrium Systems - Water and Hydrogen Bonded Liquids

Chair: J. Kurchan, Laboratoire de Physique et Mécanique des Milieux Hétérogènes, CNRS, Paris, France

WED2F6.1 11:30

Dynamics of supercooled liquid water: Novel pressure effects — •Giancarlo Franzese[1], Pradeep Kumar[2], and H. Eugene Stanley[2] — [1]Universitat de Barcelona, Spain — [2]Boston University, MA

With a water cell model, we find a dynamic crossover independently of whether water has a "liquid-liquid critical point" or is "singularity free", but the effect of pressure is strikingly different in the two scenarios.

WED2F6.2 11:50

Dissecting the hydrogen bond: a Quantum Monte Carlo approach — •Fabio Sterpone[1], Leonardo Spanu[2,3], Luca Ferraro[1], Sandro Sorella[2], and Leonardo Guidoni[4] — [1]CASPUR, Via dei Tizii 6B, 00185, Roma, Italy — [2]International School for Advanced Studied (SISSA/ISAS), Via Beirut 4, 34014 Trieste, Italy — [3]Department of Chemistry, University of California, Davis 95616 USA — [4]Dipartimento di Fisica, La Sapienza - Universita' di Roma, P.le A. Moro 2, 00185 Roma, Italy

WED2M.3 12:10

One-Dimensionally Ordered Metal Nanodot Arrays on Carburized W(110) — •Magdalena Bachmann, Martin Gabl, Norbert Memmel, and Erminald Bertel — Institute of Physical Chemistry, University of Innsbruck, A-6020 Innsbruck, Austria

One-dimensionally ordered Ag and Co nanodot arrays with extremely narrow size distribution are grown on a (15x12)C/W(110) template. Differences between these metals are discussed and cluster-cluster interactions analyzed on the basis of the 1D-Ising model.

WED2M.4 12:30

Atomic pathways during the manipulation of single atoms at semiconductor surfaces using FM-AFM — •Pavel Jelínek[1], Pablo Pou[2], Yoshiaki Sugimoto[3], Masayuk Abe[3], Oscar Custance[4], Seizo Morita[3], and Ruben Pérez[2] — [1]Institute of Physics of the ASCR, Curkovarnická 10, CZ-162 00 Prague, Czech Republic — [2]Departamento de Física Teórica de la Materia Condensada, Universidad Autónoma de Madrid, 28049 Madrid, Spain — [3]Graduate School of Engineering, Osaka University, Japan — [4]National Institute for Materials Science (NIMS), 1-2-1 Sengen, 305-0047 Tsukuba, Ibaraki, Japan

We have combined precise experimental data with an extensive set of first principles DFT simulations in order to identify the atomistic processes involved in the single-atom manipulation.

WED2A.2 12:10

Semiconductor injection lasers in quasi-periodic resonators — •Lukas Mahler[1], Alessandro Tredicucci[1], Fabio Beltram[1], Diederik Wiersma[2], Bernd Witzigmann[3], Christoph Walther[4], Jerome Faist[4], Harvey Beere[5], and David Ritchie[5] — [1]NEST-INFM and Scuola Normale Superiore, Piazza dei Cavalieri 7, I-56126 Pisa, Italy — [2]European Laboratory for Nonlinear Spectroscopy, INFM-BEC, I-50019 Sesto Fiorentino, Italy — [3]Integrated Systems Laboratory, ETH Zürich, CH-8092 Zürich, Switzerland — [4]Quantum Optoelectronics Group, Institute for Quantum Electronics, ETH Zürich, CH-8093 Zürich, Switzerland — [5]Cavendish Laboratory, University of Cambridge, J J Thomson Avenue, Cambridge CB3 0HE, United Kingdom

A one dimensional Fibonacci sequence is used to provide distributed feedback for a semiconductor laser at Terahertz frequencies. Lasing on both band-edges of the optical pseudo-gap is demonstrated.

WED2A.3 12:30

Laser emission at 730 and 950 GHz from quantum cascade structures with magnetically assisted gain — •Giacomo Scalari[1], Christoph Walther[1], Milan Fischer[1], Harvey Beere[2], David Ritchie[2], and Jérôme Faist[1] — [1]Institute of Quantum Electronics, Swiss Federal Institute of Technology Zürich,Zürich, Switzerland — [2]Cavendish Laboratory, University of Cambridge, Cambridge, UK

Laser emission at 950 GHz and 730 GHz is demonstrated from quantum heterostructures grown in the AlGaAs/GaAs material system which rely on magnetically enhanced gain to reach laser threshold.

WED2C.2 12:10

Chain Conformations and Ionization of Annealed Polyelectrolytes Studied by a Combination of Molecular Dynamics and Monte Carlo Simulations — Peter Kosovan, Zuzana Limpouchova, and •Karel Prochazka — Department of Physical and Macromolecular Chemisty, Faculty of Science, Charles University in Prague, Albertov 6, CZ-12843 Prague 2, Czech Republic

Water is generally poor solvent for annealed polyelectrolytes. The conformational transition, they undergo with increasing ionization, has been little studied in comparison with quenched polyelectrolytes. We addressed the conformational changes using computer simulations.

WED2C.3 12:30

Skin color modeling using the radiative transfer equation and the inverse problem — •Caroline Magnain, Mady Elias, and Jean-Marc Frigerio — Institut des NanoSciences de Paris, UMR CNRS 7588, Université Pierre et Marie Curie, Paris, France

The skin color is modeled thanks to the radiative transfer equation. The parameters responsible for the diversity of skin color are determined and then evaluated from experimental spectra.

WED2F1.2 12:10

Nano-crystalline grain growth: A Monte Carlo Potts model approach — •Dana Zöllner and Peter Streitenberger — Otto-von-Guericke-Universität Magdeburg, Universitätsplatz 2, D-39106, Magdeburg, Germany

Nano-crystalline grain growth is modelled using a modified Monte Carlo Potts model. We assume that the grain boundary mobility is limited at small grain sizes. The simulated growth kinetics is in agreement with experimental results.

WED2F1.3 12:30

Unified description of uniaxial ferroelectrics from low temperatures to critical point at presence of strain coupling — •Miroslaw Galazka[1], Piotr Zielinski[1,2], Przemyslaw Szklarz[3], and Grazyna Bator[3] — [1]The H. Niewodniczanski Institude of Nuclear Physics PAN, Kraków, Poland — [2]Cracow University of Technology, Institude of Physics, Kraków, Poland — [3]Faculty of Chemistry University of Wroclaw, Wrocław, Poland

Equations of state compatible with scaling hypothesis at critical point and with order parameter saturation at low temperatures are constructed for uniaxial ferroelectrics and compared with experiment.

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Aula 4

are, Sezione di Napoli, C. U. Monte S. Angelo, Via Cinthia, IT-80126 Napoli, Italy — [3]Consorzio Nazionale Interuniversitario per le Scienze Fisiche della Materia, Unità di Salerno and Dipartimento di Fisica "E. R. Caianiello", Università di Salerno, Via S. Allende, IT-84081 Baronissi (SA), Italy — [4]Theoretical Physics Group, DESY, NotkeStrasse 85 22603, Hamburg, Germany

We analyze ground states and topological properties of fully frustrated Josephson junction arrays in a Corbino disk geometry for various boundary conditions. A solid state qubit protected from decoherence is proposed with its operation modes.

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We propose a QMC approach based on a Valence Bond representation to dissect hydrogen bond intermolecular interactions into their elementary terms such as dispersion and covalent energy. The method is applied to the water dimer.

WED2F3.3 12:10

Ferromagnet / Superconductor oxide heterostructures — •Norbert M Nemes[1], Cristina Visani[1], Christian Miller[1], Flavio Bruno[1], Javier García-Barriocanal[1], Zouhair Sefrioui[1], Carlos Leon[1], Jacobo Santamaría[1], Zsolt Szatmári[2], Titusz Fehér[2], and Mar García-Hernández[3] — [1]GFMC, Dpto. Fisica Aplicada III, Universidad Complutense de Madrid, 28040 Madrid, Spain — [2]Budapest University of Technology and Economics and Condensed Matter Physics Research Group of the Hungarian Academy of Sciences, P.O. Box 91, 1521, Budapest, Hungary — [3]Instituto de Ciencia de Materiales de Madrid, ICMM- CSIC, 28049 Cantoblanco, Spain

Trilayers of LCMO/YBCO show Giant-Magneto-Resistance. I will discussthe role of spin diffusion across the superconductor, proximity effect at the F/S interface, stray fields due to domain walls and magnetic anisotropy of the ferromagnet.

WED2F4.3 12:10

Single-photon generation in superconducting nanocircuits via adiabatic passage — •Giuseppe Mangano[1,2], Jens Siewert[1,2], and Giuseppe Falci[1] — [1]Matis Cnr-Infm & Dipartimento di Metodologie Fisiche e Chimiche per l'Ingegneria (DMFCI), Università di Catania, I-95125 — [2]Institute für Theoretische Physik, Universtität Regensburg, D-93040 Regensburg, Germany

We propose a very efficient method to generate single photon in a circuit quantum electrodynamics (cQED) architecture by applying the stimulated Raman adiabatic passage (STIRAP).

WED2F6.3 12:10

Mesoscale Confined Liquids Near Criticality: Diffusion and Thermodiffusion Properties — •Alexander Chalyi[1], Leonid Bulavin[2], Kyrylo Chalyy[3], Liudmila Chernenko[4], and Yaroslav Tsekhmister[1] — [1]National Medical University, Department of Physics, Kiev, Ukraine — [2]Kiev National University, Faculty of Physics, Kiev, Ukraine — [3]National Medical Academy, Department of Medical Informatics, Kiev, Ukraine — [4]Institute of Surface Chemistry, Kiev, Ukraine

Thermoconductivity, diffusion and thermodiffusion of the mesoscale confined binary liquid mixture in the critical region are studied. Dependence of the water selfdiffusion coefficient on the pore radius in porous glass is examined.

WED2F3.4 12:30

Standing magnetoelastic waves in bi-layered structure magnetic - non-magnetic dielectric — •Zukhra Gareeva and Rurik Doroshenko — Institute of Molecular and Crystal Physics, prospect Octyabrya 151, 450075 Ufa, Russia

Thickness modes of magnetoelastic waves (MEW) in bi -layered structures was studied. It was shown that resonant frequensies of standing MEW strongly depend on a wave number of MEW propagating along the surface.

WED2F4.4 12:30

Protected subspaces against charge noise in coupled charge-phase qubits — •Andrea Mastellone, Antonio D'Arrigo, Elisabetta Paladino, and Giuseppe Falci — MATIS CNR-INFM, Catania, Italy, and Dipartimento di Metodologie Fisiche e Chimiche per l'Ingegneria (DMFCI), Università di Catania, Viale Andrea Doria 6, I-95125 Catania, Italy

In this work we perform a full analysis of charge noise in two Josephson qubits with a fixed capacitive coupling. Reduced sensitivity to charge noise with respect to the single qubit setup is predicted.

WED2F6.4 12:30

Time-resolved spectroscopy of water confined in nano-pores — Andrea Taschin[1,2], Riccardo Cucini[1,2], Paolo Bartolini[1,2], and •Renato Torre[1,2,3] — [1]LENS, Univ. di Firenze, Via, N. Carrara 1, I-50019 Sesto Fiorentino, Firenze, Italy. — [2]INFM-CRS-Soft Matter (CNR), c/o Univ. la Sapienza, Piaz. A. Moro 2, I-00185, Roma,Italy. — [3]Dip. di Fisica, Univ. di Firenze, Via Sansone 1, I-50019 Sesto Fiorentino, Firenze, Italy.

We present a study of relaxation and vibrational dynamics of water confined in 4 nm silica pores in a large temperature range by transient grating and optical Kerr effect measurements with sub-pico-second time resolution.

12:50 – 14:30: Lunch Break

14:30 – 16:20

EPS14.1: 14th General Conference of the European Physical Society - Part I

Chair: Albert Fert, UMP CNRS/Thales, Palaiseau, France

EPS14.1.1 (Plenary) 14:50

Graphene: Magic of Carbon Flatland — •Andre Geim and Kostya Novoselov — Manchester Centre for Mesoscience & Nanotechnology, University of Manchester M13 9PL, U.K.

Graphene is a rapidly rising star on the horizon of condensed matter physics, revealing a cornucopia of new phenomena. I will overview our work on graphene concentrating on its next-to-magic properties and speculate about applications.

EPS14.1.2 (Plenary) 15:35

2011 - Odyssey in Nanospace — •Helmut Dosch — Max Planck Institute for Metals Research, Heisenbergstr. 3, 70569 Stuttgart, Germany

In this lecture I discuss the future challenges and breakthroughs in Nanoscience and Nanotechnologies by the use of European Megafacilities.

16:20 – 17:00: Coffee Break

17:00 – 18:35

EPS14.2: 14th General Conference of the European Physical Society - Part II

Chair: Klaus Wandelt, University of Bonn, Bonn, Germany

EPS14.2.1 (Plenary) 17:00

News from Quantum Hall Physics — •Klaus von Klitzing — Max Planck Institute for Solid State Research, Stuttgart, Germany

Every day a new QHE- paper is published. The talk summarizes the applications of this effect in metrology and the most recent basic research on coupled QHE devices which show properties of exciton condensation and superfluidity.

18:35 – 20:00: Reception

Notes

Notes

Aula Magna

8:45 – 9:30

THUPL: Plenary 3

Chair: Giorgio Parisi, University La Sapienza, Roma, Italy

THUPL.1 (Plenary) 8:45

Condensed matter physics with light and atoms: ultra-cold fermions in optical lattices. — •Antoine Georges — Ecole Polytechnique and CNRS, Palaiseau, France

A new form of condensed matter physics is emerging from the study of ultra-cold fermionic atoms in optical lattices. I will review some recent achievements and future challenges in this field.

9:40 – 11:00

THU1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties III

Chair: Daniel Malterre, Université Henri Poincaré, Nancy, France

THU1M.1 (Invited) 9:40

One-Dimensional Physics on Surfaces: Charge Density Waves, Fluctuations, and Phase Transitions — •Erminald Bertel, Alexander Menzel, and Enrico Doná — Institute of Physical Chemistry, University of Innsbruck, Innsbruck, Austria

Phase diagram and electronic properties of adsorbate/Pt(110) surfaces are explored using variable-temperature STM, angle-resolved photoemission and low-energy electron diffraction. Evidence for a Peierls transition, fluctuations and phase separation typical for quasi-1D correlated systems is found.

Aula Amaldi

9:40 – 11:00

THU1A: Semiconductor Physics - Quantum Transport

Chair: G. Grosso, Università di Pisa, Italy

THU1A.1 (Invited) 9:40

Electronic transport in quantum dots: from GaAs to graphene — •Thomas Ihn, Simon Gustavsson, Thomas Müller, Stephan Schnez, Johannes Güttinger, Francoise Molitor, Christoph Stampfer, and Klaus Ensslin — Solid State Physics Laboratory, ETH Zurich, Schafmattstrasse 16, 8093 Zurich, Switzerland

Experiments on quantum dots will be reviewed in which a capacitively coupled quantum point contact is used as a charge detector. This technique is applied for studying quantum dots in GaAs and in graphene.

Aula Conversi

9:40 – 11:00

THU1C: Joint Biological Physics & Life Sciences and Polymer Physics VIII

Chair: Hans Riegler, MPIKG, Potsdam, Germany

THU1C.1 (Invited) 9:40

Directed Self-Oriented Self-Assembly of Block Copolymers: Bottom-Up Meeting Top-Down — •Thomas Russell — Department of Polymer Science and Engineering University of Massachusetts

By combining directed self-orienting self-assembly of block copolymers, the bottom-up approach, with micro-fabrication processes, the top-down approach, faster, better and cheaper devices can be generated in very simple, yet robust, ways.

Aula 1

9:40 – 11:00

THU1F1: Materials - Carbon Nanotubes

Chair: T. Pichler, University of Wien, Wien, Austria

THU1F1.1 9:40

Towards a Controlled Assembly of Molecular Chains: Functionalized Fullerenes inside Carbon Nanotubes — •Rudolf Pfeiffer[1], Thomas W. Chamberlain[2], Herwig Peterlik[1], Hans Kuzmany[1], Christian Kramberger[3], Ferenc Simon[4], Francesco Zerbetto[5], Manuel Melle-Franco[5], Luke Staddon[2], Neil R. Champness[2], G. Andrew D. Briggs[6], and Andrei N. Khlobystov[2] — [1]Faculty of Physics, University of Vienna, Austria — [2]School of Chemistry, University of Nottingham, Nottingham NG7 2RD, UK — [3]IFW-Dresden, Germany — [4]TU Budapest, Hungary — [5]Dipartimento di Chimica, Universit di Bologna, V. F. Selmi 2, 40126 Bologna, Italy — [6]Department of Materials, University of Oxford, Oxford OX1 3PH, UK

SWCNTs were filled with alky- and aryl-functionalized fullerenes. By changing the attached sidegroups we can engineer the distance between the encapsulated fullerenes, which is important for the production of 1D spin chains.

THU1F1.2 10:00

Electron-electron correlation effects in graphene and graphite — •Claudio Attaccalite — Universidad del Pais Vasco, Unidad de Fisica de Materiales Centro Mixto CSIC-UPV/EHU Centro Jose Mari Korta, Avd, Tolosa 72 E-20018 San Sebastian. SPAIN

Aula 3

9:40 – 11:00

THU1F3: Magnetism - Strongly Correlated Electron Systems

Chair: V. Sechovsky, Charles University, Prague, Czech Republic

THU1F3.1 9:40

Room temperature ferromagnetism in the TiO_2: rutile system: The role of oxygen vacancies and transition metal impurities — •Luigi Sangaletti[1], Giovanni Drera[1], Maria Cristina Mozzati[2], Pietro Galinetto[2], Yu A. Diaz-Fernandez[3], Lorenzo Malavasi[3], Adolfo Speghini[4], and Marco Bettinelli[5] — [1]Dipartimento di Matematica e Fisica, Università Cattolica, Via dei Musei 41, 25121, Brescia, Italy — [2]CNISM and Dipartimento di Fisica "A. Volta", Università di Pavia, Via Bassi 6, 27199, Pavia, Italy — [3]Dipartimento di Chimica fisica, Università di Pavia, Via Bassi 6, 27100, Pavia, Italy — [4]DiSTeMeV, Università di Verona and INSTM, UdR Verona, Villa Lebrecht, Via della Pieve 70, 37029 San Floriano, Verona, Italy — [5]Dipartimento Scientifico e Tecnologico, Università di Verona, Strada Le Grazie 15, 37134 Verona, Italy

The effects of oxygen stoichiometry on the magnetic properties of pure and doped TiO_2 rutile are presented. Ferromagnetism is detected already at room temperature and increases with the concentration of oxygen defects.

THU1F3.2 10:00

Magnetism in $Sr_3Ru_2O_7/Sr_4Ru_3O_{10}$ Eutectic Crystals — •Danilo Zola[1,2], Rosalba Fittipaldi[1,2], Massimiliano Polichetti[1,2], Antonio Vecchione[1,2], Mario Cuoco[1,2], Francesco Laviano[3], Enrica Mezzetti[3], and Sandro Pace[1,2] — [1]SuperMat CNR-INFM Regional

Aula 4

9:40 – 11:00

THU1F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity I

Chair: A. Goldoni, Sincrotrone Trieste, Trieste, Italy

THU1F4.1 (Invited) 9:40

Interplay between electron-phonon and Coulomb — •Olle Gunnarsson[1], Oliver Rösch[2], Giorgio Sangiovanni[1], Erik Koch[3], Claudio Castellani[4], and Massimo Capone[4] — [1]Max-Planck-Institut für Festkörperforschung, D-70506 Stuttgart, Germany — [2]Gesellschaft für Anlagen- und Reaktorsicherheit mbH, D-50667 Köln, Germany — [3]Institut für Festkörperforschung, Forschungszentrum Jülich, D-52425 Jülich, Germany — [4]Dipartimento di Fisica Universit'a di Roma "La Sapienza", I-00185 Roma, Italy

We have studied the influence of strong correlation on electron-phonon interaction. We find that, thanks to antiferromagnetic correlations, electron-phonon effects are strongly suppressed in the phonon but not electron Green's function.

Aula 6

9:40 – 11:00

THU1F6: Physics of Socio-Economic and Complex Systems - Financial Markets

Chair: M. Marsili, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy

THU1F6.1 (Invited) 9:40

The stock option market as a tool to measure investor's risk — •Stefano Ciliberti — Volatility Arbitrage, CFM, Paris, France

I will discuss some properties of the stock option volatility surface, which is supposed to represent a synthetic market forecast on the future stock price volatility. I will focus on those aspects that can be explained by the dynamics of the underlying asset and then investigate the logical consequences of this approach as compared to the market behavior.

Aula Magna

Aula Amaldi

Aula Conversi

Aula 1

We studied the effect of the electronic correlation on the band structure of graphite and graphene within GW approximation and determine the electron-phonon coupling on various approximations to explain recent Raman and ARPES experiments.

THU1M.2 10:20

Electron-phonon effects on transport and one-particle properties*of two-dimensional spin-orbit electron systems — •Emmanuele Cappelluti[1,2], Claudio Grimaldi[3], and Frank Marsiglio[4] — [1]SMC Research Center, INFM-CNR c/o Dept. Physics, *University "La Sapienza", P.le A. Moro 2, 00185 Roma, Italy — [2]Istituto dei Sistemi Complessi (ISC), CNR, v. dei *Taurini 19, 00185 Roma, Italy — [3]LPM, Ecole Polytechnique Fédérale de*Lausanne, Station 17, CH-1015 Lausanne, Switzerland — [4]Department of Physics, University of Alberta,*Edmonton, Alberta, Canada, T6G 2J1

We investigate the role of the electron-phonon coupling in two-dimensional electron Rashba gases concerning in particular the dynamical spin-Hall, the criterion for superconducting pairing and the one-particle spectral properties.

THU1A.2 10:20

Non-linear transport across fully-tunable point junctions between integer and fractional quantum Hallstates — •Nicola Paradiso[1], S Roddaro[1], G Biasiol[2], Lucia Sorba[1], V Pellegrini[1], and F Beltram[1] — [1]NEST-INFM, Scuola Normale Superiore, Pisa,Italy — [2]TASC-INFM Laboratory, Trieste, Italy

We exploit particle-hole duality to implement fully-tunable point junctions between different quantum Hall states. We discuss our non-linear transport results in relation to predictions and evidences about the inner structure of edge channels.

THU1C.2 10:20

The Articular Cartilage Paradigm of Soft-Matter, Revisited — •Adam Gadomski — Department of Modeling of Physicochemical Processes, University of Technology & Life Sciences, PL-85796 Bydgoszcz, Poland

The interstitial fluid pressurization, a signature of facilitated friction-biolubrication in articular cartilage (AC), is carried out electromechanically and can be viewed as protons permeation through transmembrane micelles-containing AC interspaces.

THU1F1.3 10:20

CVD growth of carbon nanotubes: XPS study of substrate-catalyst interaction — •Cinzia Cepek[1], Cecilia Mattevi[1,2], Carla Castellarin-Cudia[3], Andrea Goldoni[3], Christoph Tobias Wirth[4], Stephan Hofmann[4], Mirco Cantoro[5], and John Robertson[4] — [1]Laboratorio Nazionale TASC-CNR-INFM, ss 14, km 163.5, I-34012 Trieste, Italy — [2]AREA Science Park, Padriciano 99, I-34012 Trieste, Italy — [3]Surface Science Division, Sincrotrone Trieste SCpA, ss 14, km 163.5, I-34012 Trieste, Italy — [4]Department of Engineering, University of Cambridge, Cambridge CB3 0FA, UK — [5]IMEC, AMPS/NANO, Kapeldreef 75, 3001 Leuven, Belgium

The importance of the catalyst nanoparticle/substrate interaction in the CNT growth via surface-bound CVD has been studied by performing a systematic in-situ XPS study of CNT growth done in different experimental apparatus.

THU1M.3 10:40

One-dimensional conductance in atomic wires induced by two-dimensional by lateral interactions: Pb on Si(557) — •Herbert Pfnür, Christoph Tegenkamp, Marcin Czubanowski, and Annemarie Schuster — Institut für Festkörperphysik, Abteilung Oberflächen, Leibniz Universität Hannover, D-30167 Hannover, Germany

Monolayer coverage of Pb reorganizes the Si(557) surface into new concentration dependent facet orientations. This reorganization results in one-dimensional conductance for the (223) facets and reversible switching to two-dimensional by an order-order phase transition.

THU1A.3 10:40

Cylindrical 2DEG in a Magnetic Field: Landau Levels and Aharonov-Bohm Effect — •Giulio Ferrari[1], Andrea Bertoni[1], Guido Goldoni[1,2], and Elisa Molinari[1,2] — [1]S3 CNR-INFM National Research Center, Via Campi 213/A, 41100 Modena, Italy — [2]Dipartimento di Fisica, Università di Modena e Reggio Emilia, Modena, Italy

We compute energy bands, density of states and eigenfunctions of carriers on a cylindrical surface in a magnetic field. Tuning the intensity and the direction of the field, Aharonov-Bohm effect and Landau levels are investigated.

THU1C.3 10:40

Microphase separation in diblock copolymers with amphiphilic block: local chemical structure can dictate global morphology — •Alexei Khokhlov[1,2], Pavel Khalatur[2,3], and Yurii Kriksin[4] — [1]Physics Department, Moscow State University, Moscow 119992, Russia — [2]Department of Polymer Science, University of Ulm, Ulm D-89069, Germany — [3]Institute of Organoelement Compounds, Russian Academy of Sciences, Moscow 119991,Russia — [4]Institute for Mathematical Modeling, Russian Academy of Sciences, Moscow 125047, Russia

It is shown (theoretically and by computer experiments) that microphase separation for block-copolymers composed of one monophilic and one amphiphilic block leads to non-trivial morphologies due to the surface activity of amphiphilic units.

THU1F1.4 10:40

Diffraction Intensities of Double-Wall Carbon Nanotubes: Symmetry Based Characterization — •Tatjana Vukovic and Milan Damnjanovic — Faculty of Physics, University of Belgrade, Studentski trg 12-16, P. O. Box 368, Belgrade 11001, Serbia

We present a full symmetry based analysis of diffraction intensities of double-wall carbon nanotubes enabling direct insight into various effects of chirality of its walls, as well as their mutual position, on the intensity distribution.

Aula 3

Laboratory Salerno, via S. Allende I-84081 Baronissi (SA), Italy — [2]Department of Physics "E. R. Caianiello", University of Salerno, via S. Allende, I-84081 Baronissi (SA), Italy — [3]Department of Physics, Politecnico di Torino, Corso Duca degli Abruzzi, I-10129 Torino, Italy

We discuss the magnetic properties of $Sr_3Ru_2O_7$/ $Sr_4Ru_3O_{10}$ eutectic crystals where the two phases shape a multilayered structure. The magnetism in these crystals cannot be discussed as superimposition of the magnetic properties of the single phases.

THU1F3.3 10:20

Broken Time-Reversal Symmetry in Triplet Superconductor Junctions — Philip Brydon[1], Christian Iniotakis[2], •Dirk Manske[1], and Manfred Sigrist[2] — [1]Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany — [2]ETH-Zürich, Zürich, Switzerland

We demonstrate that the breaking of time-reversal symmetry in Josephson junctions between triplet superconductors stabilizes a magnetic moment at the junction barrier. The consequences of this novel behaviour are investigated.

THU1F3.4 10:40

Modelling of phase transitions in the RVO$_3$ perovskites — •Andrzej M. Oleś[1,2], Peter Horsch[1], Giniyat Khaliullin[1], and Louis-Felix Feiner[3] — [1]Max-Planck-Institut FKF, Stuttgart, Germany — [2]Jagellonian University, Cracow, Poland — [3]Philips Research Laboratories, Eindhoven, The Netherlands

We introduce the spin-orbital superexchange model which unravels the physical mechanisms responsible for the observed phase diagram of the RVO$_3$ perovskites. It reveals a nontrivial interplay between superexchange, the orbital-lattice coupling and orthorhombic lattice distortions.

Aula 4

THU1F4.2 10:20

CuO$_2$ in-plane phonon anomaly in high Tc superconductors: the case of the Oxychlorides — •Matteo d'Astuto[1], Matteo Calandra[1], Paola Giura[1], Ikuya Yamada[1], Moritz Hoesch[2], Michael Krisch[2], Masaki Azuma[3], Mikio Takano[3], Andrea Gauzzi[1], Francesco Mauri[1], and Abhay Shukla[1] — [1]Institut de Minéralogie et de Physique des Milieux Condensés (IMPMC), Univ. Pierre et Marie Curie Paris 6, 140 rue de Lourmel, 75015 Paris, France — [2]European Synchrotron Radiation Facility, BP 220, F-38043 Grenoble cedex, France — [3]Institute for Chemical Research, Kyoto University, Uji, Kyoto 611-0011, Japan

We will present our new measurements and calculations on the phonon dispersion and lifetime in superconducting $Ca_{2-x}CuO_2Cl_2$, and discuss the electron-phonon coupling strength in this system and in cuprate.

THU1F4.3 10:40

Electron-phonon Effects in Undoped Cuprates — •Vittorio Cataudella[1], Giulio De Filippis[1], Andrei Mishchenko[2], and Naoto Nagaosa[3] — [1]Coherentia-CNR-INFM and Dip. Scienze Fisiche, Università di Napoli "Federico II", Napoli Italy — [2]CREST, Japan Science and Technology Agency (JST), Tsukuba 305-8562, Japan — [3]CREST, Dep. of Applied Physics, The University of Tokyo, Tokyo 113, Japan

The effect of hole-phonon coupling on the spectral function and on ground state properties of undoped cuprates is studied. The results provide a clear scenario for understanding specific features of ARPES measuraments.

Aula 6

THU1F6.2 10:20

Agent Based Model for Economics: Stylized Facts and their Self-Organization — •Valentina Alfi[1,2], Luciano Pietronero[2,3], and Andrea Zaccaria[2] — [1]Centro Studi e Ricerche "E. Fermi", Via Panisperna, Roma, Italy — [2]Università degli Studi di Roma "La Sapienza", P.le A. Moro, Roma, Italy — [3]Istituto dei Sistemi Complessi, CNR, Via dei Taurini, Roma, Italy

We introduce an Agent Based Model for financial markets, in which markets features emerge as a finite size effect with respect to the fluctuations of agents. We then consider the self-organization to this quasi-critical state.

THU1F6.3 10:40

Causality, information flow, and efficient prices in financial markets — •Fabrizio Lillo — Dipartimento di Fisica e Tecnologie Relative, viale delle Scienze, I-90128 Palermo, Italy — Santa Fe Institute, 1399 Hyde Park Road, Santa Fe, NM 87501, USA

We study the community structure of the trading networks of brokers in the Spanish Stock Exchange. We explain the asymmetric causality between order flow and returns in terms of delayed market clearing and market efficiency.

Aula Magna

11:00 – 11:30: Coffee Break

11:30 – 12:50

THU2M: Surface, Interface and Low-Dimensional Physics - Small Particle and Nanowires

Chair: E. Molinari, Universita' di Modena e Reggio Emilia and CNR-INFM S3, Modena, Italy

THU2M.1 11:30

From sphere to star: shape dependence of surface plasmons in gold nanoparticles studied by STEM-EELS — •Stefano Mazzucco, Odile Stéphan, Mathieu Kociak, and Christian Colliex — Laboratoire de Physique des Solides, Univ. Paris-Sud, CNRS, UMR 8502, F-91405 Orsay Cedex, France

We present experimental nanometer-scale maps showing how morphology affects surface plasmons of gold nanoparticles. Moving from sphere-like to star-like nanoparticles a supplementary sharpness-dependent tip mode arises besides the core sphere plasmon.

THU2M.2 11:50

Resonant Raman spectroscopy as a probe of local structure of semiconductor core-shell nanoparticles — •Volodymyr Dzhagan[1], Mykhailo Valakh[1], Alexandr Stroyuk[2], Alexandra Rayevskaya[2], Stepan Kuchmiy[2], and Dietrich Zahn[3] — [1]Institute of Semiconductor Physics of National Acad. Sci. of Ukraine, prospekt Nauky 45, Kyiv 03028, Ukraine — [2]Institute of Physical Chemistry of National Acad. Sci. of Ukraine, prospekt Nauky 31, Kyiv 03028, Ukraine — [3]Institute of Physics, Chemnitz University of Technology, Reichenhainer Straße 70, D-09126 Chemnitz, Germany

A range of II-VI core-shell nanoparticles are studied by resonant Raman scattering, with the focus on the effect of interdiffusion and strain at the core-shell interface on vibrational and photoluminescence properties of the nanoparticles

THU2M.3 12:10

Repulsive interaction between adsorbed CO molecules on Pt modified Ge(001) — •Daan Kockmann, Harold J.W. Zandvliet, and Bene Poelsema — University of Twente, Enschede, The Netherlands

Statistical analysis of nearest neighbor spacing of

Aula Amaldi

11:00 – 11:30: Coffee Break

11:30 – 12:50

THU2A: Semiconductor Physics - Quantum Effects

Chair: Mario Capizzi, Sapienza Università di Roma, Rome, Italy

THU2A.1 11:30

Self-sustained magnetoelectric oscillations in magnetic double barrier structures — •Christian Ertler and Jaroslav Fabian — Institute for Theoretical Physics, University of Regensburg, Universitätstraße 31, 93040 Regensburg, Germany

We theoretically investigate the highly nonlinear dynamics of a ferromagnetic semiconductor double barrier structure, in which the transport and magnetic properties are strongly coupled. The occurrence of intrinsic self-sustained current and magnetization oscillations is predicted.

THU2A.2 11:50

Magnetic-field dependent tunnel coupling of stacked one-dimensional electron systems — •Saskia F. Fischer[1], Patric S. Zapp[1], Sven S. Buchholz[1], Gabriela Apetrii[1], Ulrich Kunze[1], Dieter Schuh[2], and Gerhard Abstreiter[3] — [1]Werkstoffe und Nanoelektronik, Ruhr-Universitaet Bochum, D-44780 Bochum, Germany — [2]Experimentelle und Angewandte Physik, Universitaet Regensburg, D-93040 Regensburg, Germany — [3]Walter Schottky Institut, Technische Universitaet Muenchen, D-85748 Garching, Germany

Tunnel-coupled quantum wire states and landau levels in the quantum Hall regime are investigated by magnetotransport. The magnetic-*eld induced oscillation of the tunnelling gap in the single-mode limit allows control of hybridization in quantum transport.

THU2A.3 12:10

Quantum transport in magnetic fields: Real-space-real-time approach — •Esa Räsänen[1,2], Heiko Appel[1,2], Alberto Castro[1,2], and E.K.U. Gross[1,2] — [1]Institut für Theoretische Physik, Freie Universität Berlin, Arnimallee 14, D-14195 Berlin, Germany — [2]European The-

Aula Conversi

11:00 – 11:30: Coffee Break

11:30 – 12:50

THU2C: Joint Biological Physics & Life Sciences and Polymer Physics IX

Chair: K. Saalwächter, Martin-Luther-Universität Halle-Wittenberg, Halle, Germany

THU2C.1 (Invited) 11:30

Dynamics of cyclic polymers — •Dimitris Vlassopoulos[1,2], Michael Kapnistos[1,3], Michael Lang[4,5], Wim Pyckhout-Hintzen[6], Dieter Richter[6], Donghyun Cho[7], Taihyun Chang[7], Jacques Roovers[8], and Michael Rubinstein[4] — [1]Institute of Electronic Structure and Laser, Foundation for Research and Technology * Hellas, Heraklion, Crete, Greece — [2]Department of Materials Science & Technology, University of Crete, Heraklion, Greece — [3]Department of Chemical Engineering, University of California, Santa Barbara, CA, USA — [4]Department of Chemistry, University of North Carolina, Chapel Hill, NC, USA — [5]Leibniz Institute for Polymer Research, Dresden, Germany — [6]Institute of Solid State Research, Forschungszentrum Jülich, Jülich, Germany — [7]Department of Chemistry, Pohang University of Science & Technology, Pohang, Korea — [8]Institute for Chemical Process & Environmental Technology, National Research Council, Ottawa, Ontario, Canada

We show experimental results supporting the power-law stress relaxation function of non-concatenated entangled cyclic polymers. We also show that trace amounts of added linear chains slow down their dynamics.

THU2C.2 12:10

Well defined nanofiller controlled structure in polymer chains matrix: from SANS and TEM to original filler network mechanical behavior. — Jacques Jestin[1], Chloé Chevigny[1], Nicolas Jouault[1], Florent Dalmas[2], Didier Gigmes[3], Denis

Aula 1

11:00 – 11:30: Coffee Break

11:30 – 12:50

THU2F1: Surface, Interface and Low-Dimensional Physics - Graphene

Chair: P. Jelinek, Institute of Physics of the ASCR, Prague, Czech Republic

THU2F1.1 11:30

Optical properties of graphene nanoribbons — Deborah Prezzi[1], Daniele Varsano[1], Alice Ruini[1,2], Andrea Marini[3], and •Elisa Molinari[1,2] — [1]INFM-CNR-S3, National Center on NanoStructures and BioSystems at Surfaces, I-41100 Modena, Italy — [2]Dipartimento di Fisica, Università di Modena e Reggio Emilia, I-41100 Modena, Italy — [3]Dipartimento di Fisica, Università di Roma "Tor Vergata", I-0133 Roma, Italy

We investigate from first principles the optoelectronic properties of graphene nanoribbons (GNRs) with the inclusion of many-body effects. We show that strong exciton binding is accompanied by relevant effects of edge passivation and width modulation.

THU2F1.2 11:50

Soft ripples in the first graphene layer on SiC(0001) surface: A joined STM and ab-initio study — François Varchon, •Pierre Mallet, Jean-Yves Veuillen, and Laurence Magaud — Institut Néel, C.N.R.S. and Université Joseph Fourier, Boîte Postale 166, F-38042 Grenoble Cedex 9, France

STM and ab initio studies allow us to give a description of the graphene/SiC(0001) interface at the atomic scale. We demonstrate the existence of substrate-induced ripples in the graphene monolayer.

THU2F1.3 12:10

Even-odd effect in graphene valley filter — •Alessandro Cresti[1], Giuseppe Grosso[1], and Giuseppe Pastori Parravicini[2] — [1]Dipartimento di Fisica, Universita' di Pisa, Italy — [2]Dipartimento di Fisica, Universita' di Pavia, Italy

We analyze the peculiar even-odd dependence of

Thursday

Aula 3

11:00 – 11:30: Coffee Break

11:30 – 12:50

THU2F3: Magnetism - Magnetic Nanoparticles and Nanowires

Chair: D. Fiorani, ISM-CNR, Roma, Italy

THU2F3.1 11:30

Characterization of interactions and switching behavior in particulate magnetic materials by scalar and vector (rotational) first-order reversal curves (FORC) diagrams — •Laurentiu Stoleriu[1], Alexandru Stancu[1], and Petru Andrei[2] — [1]Department of Physics, Alexandru Ioan Cuza University, Blvd. Carol I, 11, Iasi, Romania — [2]Department of Electrical and Computer Engineering, Florida State University and Florida A&M University, Tallahassee, FL, USA

One presents a comparative study of the physical meanings of data extracted from the scalar FORC diagrams and the newly-introduced vector FORC diagram, measured on the rotational hysteresis describing a material's vector switching properties.

THU2F3.2 11:50

Correlation of structural and magnetic properties of size-selected FeCo alloy nanoparticles on surfaces — •Mathias Getzlaff[1], Furkan Bulut[1], Wolfgang Rosellen[1], Renate Kerstin Gebhardt[1], Armin Kleibert[2], Karl-Heinz Meiwes-Broer[2], and Joachim Bansmann[3] — [1]University of Düsseldorf, D-40225 Düsseldorf, Germany — [2]University of Rostock, D-18051 Rostock, Germany — [3]University of Ulm, D-89069 Ulm, Germany

Size-selected softmagnetic FeCo alloy clusters are deposited under soft-landing and ultrahigh vacuum conditions on various surfaces. Thus, we are able to correlate the structural and element-specific magnetic properties of the nanoparticles using STM and XMCD.

THU2F3.3 12:10

Morphological and magnetic characterization of Ni nanoparticles films — •Sergio D'Addato[1,2], Luca Gragnaniello[1,2], Alessandro di Bona[1], Alberto Rota[1], Sergio Valeri[1,2], Franco Ronconi[3], and Federico Spizzo[3] — [1]INFM-CNR, S3 Research Centre,

Aula 4

11:00 – 11:30: Coffee Break

11:30 – 12:50

THU2F4: Superconductivity and Highly-Correlated Systems - High Tc superconductivity II

Chair: G. Ghiringhelli, Politecnico di Milano, Milano, Italy

THU2F4.1 11:30

Bond Stretching Phonon Anomalies in the Hubbard-Holstein model — •Roberta Citro and Maria Marinaro — Dipartimento di Fisica "E.R. Caianiello" and CNISM Unit, Via S. Allende, 84081 Baronissi (Sa), Italy

Phonon anomalies observed in strongly correlated electron systems are analyzed within the Hubbard-Holstein model in the limit of strong local electron correlations and in presence of long-range Coulomb interaction.

THU2F4.2 11:50

Enhancement of the superconducting transition temperature in LSCO bilayers: Role of pairing and phase stiffness — •Ofer Yuli[1], Itay Asulin[1], Leonid Iomin[2], Gad Koren[2], Oded Millo[1], and Dror Orgad[1] — [1]Racah Institute of Physics, The Hebrew University of Jerusalem, Jerusalem 91904, Israel — [2]Department of Physics, Technion - Israel Institute of Technology, Haifa 32000, Israel

We report an enhancement of Tc in LSCO(x=0.35) /LSCO(x) bilayers (0.06<x<0.15) with respect to the bare LSCO film. The enhanced transition displays 2D characteristics and is attributed to increased phase stiffness induced by the overdoped layer.

THU2F4.3 12:10

The role of the vortex-core energy within the Kosterlitz-Thouless transition — •Lara Benfatto[1,2], Claudio Castellani[2], and Thierry Giamarchi[3] — [1]Centro Studi e Ricerche "Enrico Fermi", via Panisperna 89/A, I-00184, Rome, Italy — [2]Department of Physics,

Aula 6

11:00 – 11:30: Coffee Break

11:30 – 12:50

THU2F6: Physics of Socio-Economic and Complex Systems - Socio-Economic Networks

Chair: F. Lillo, Università di Palermo, Palermo, Italy

THU2F6.1 (Invited) 11:30

Block-Structure and Function in Networks — •Joerg Reichardt — Institute for Theoretical Physics, University of Würzburg, Germany

Patterns of connectivity among groups of nodes are intimately linked to the nodes' function in networks. A novel method to detect such patterns of connectivity and an application to the world trade network are presented.

THU2F6.2 12:10

Spectral properties of uncorrelated random networks — Sergey Dorogovtsev[1,2], Jose-Fernando Mendes[1], and •Alexander Samukhin[1,2] — [1]Departamento de Física da Universidade de Aveiro, 3810-193 Aveiro, Portugal — [2]A. F. Ioffe Physico-Technical Institute, 194021

Aula Magna

adsorbed CO molecules on monatomic Pt-chains shows that the CO molecules repel each other. This repulsion, caused by electron depletion, gradually fades away within 3-5 nm.

THU2M.4 12:30

Structural origin of magnetic anisotropy in $CoPt_3$(111) epitaxial nanostructured alloys — •Fabiola Liscio[1,2], Mireille Maret[1], Carlo Meneghini[2], Settimio Mobilio[2], Olivier Proux[3], Denys Makarov[4], Christoph Brombacher[5], and Manfred Albrecht[5] — [1]SIMAP, INP Grenoble-CNRS-UJF, 1130 rue de la Piscine, BP75, 38402 Saint Martin d'Heres, France — [2]Dipartimento di Fisica "E. Amaldi", Università di Roma Tre, via della Vasca Navale 84, I-00146 Roma, Italy — [3]Institut Néel, 25 avenue des Martyrs, 38042 Grenoble, France — [4]University of Konstanz, Department of Physics, D-78457 Konstanz, Germany — [5]Chemnitz University of Technology, Institute of Physics, D-09107 Chemnitz, Germany

Assemblies of (111)-oriented $CoPt_3$ nanostructures grown at room temperature on WSe_2(0001) exhibit unexpected perpendicular magnetic anisotropy. Such anisotropy is related to the existence of short-range planar Cobalt segregation promoted by Se surfactant effect during co-deposition.

12:50 – 14:40: Lunch Break

14:40 – 16:20

THU3M: Surface, Interface and Low-Dimensional Physics - Liquid-Solid Interfaces

Chair: E. Bertel, University of Innsbruck, Innsbruck, Austria

Aula Amaldi

oretical Spectroscopy Facility (ETSF)

We apply time-dependent density-functional theory to investigate electron transport in various two-dimensional nanostructures. As the first applications we consider (i) the Aharonov-Bohm flow through quantum rings in magnetic fields and (ii) electron pumping.

THU2A.4 12:30

Spin Coulomb Drag — •Samvel Badalyan[1,2], Chang Sub Kim[3], and Giovanni Vignale[4] — [1]Department of Radiophysics, Yerevan State University, 1 A. Manoukian St., Yerevan, 375025, Armenia — [2]Department of Physics, Institute for Theoretical Physics, 93040 Regensburg, Germany — [3]Department of Physics, Chonnam National University, Gwangju 500-757, Korea — [4]Department of Physics and Astronomy, University of Missouri - Columbia, Missouri 65211, USA

We investigate the spin Coulomb drag (SCD) in a quasi-two-dimensional electron gas beyond the random phase approximation. Our results are in a very good agreement with the experimental findings and verify the observation of SCD.

12:50 – 14:40: Lunch Break

14:40 – 16:20

THU3A: Semiconductor Physics - Optical Phenomena in Low-Dimensional Systems

Chair: F. Martelli, Laboratorio TASC CNR.INFM, Trieste, Italy

Aula Conversi

Bertin[3], and •François Boué[1] — [1]Laboratoire Léon Brillouin CNRS-CEA Saclay 91191 Gif-sur-Yvette Cedex France — [2]Institut Chimie Matériaux Paris Est (ICMPE),CNRS - Vitry-Thiais France — [3]CROPS, Univ. St Jérôme, Cc 542, Ave. Normandie Niemen, 13397 Marseille Cedex 20 France

Very well-defined homogeneous dispersions of nanofillers (˜ 10 nm) in polymer melts, characterized by SANS, TEM, are obtained through dispersion in convenient solvent or chain grafting. Differential Mechanical Analysis gives plateau moduli well before percolation.

THU2C.3 12:30

Chromophore States in Photocromic Green Fluorescent Protein Mutants: a Raman Study — •Stefano Luin[1,3], Valerio Voliani[1,2], Giacomo Lanza[1], Ranieri Bizzarri[1,2,3], Riccardo Nifosì[1,2], Pietro Amat[1,2], Valentina Tozzini[1,2], Michela Serresi[1,3], and Fabio Beltram[1,2,3] — [1]Scuola Normale Superiore — [2]NEST CNR-INFM — [3]IIT Research Unit at Scuola Normale Superiore; piazza dei Cavalieri 7, I-56126 Pisa (Italy)

We studied the chromophores of and in reversibly switchable fluorescent proteins, starting with the experimental and calculated Raman spectra of their states; these have been distinguished by their different protonation or cis-trans isomerization.

12:50 – 14:40: Lunch Break

14:40 – 16:20

THU3C: Joint Biological Physics & Life Sciences and Polymer Physics X

Chair: K. Prochazka, Charles University, Prague, Czech Republic

Aula 1

the current-blocking effect in bipolar graphene junctions obtained in zigzag nanoribbons. We present numerical simulations and propose a symmetry-based interpretation of the effect.

THU2F1.4 12:30

Curved graphene sheets grown at the edges of stacked graphene planes — Iskandar Kholmanov[1,2], Emanuele Cavaliere[1], Mattia Fanetti[1,2], Cinzia Cepek[2], and •Luca Gavioli[1,2] — [1]Dipartimento di Matematica e Fisica, Università Cattolica del Sacro Cuore, via dei Musei 41, IT-25121 Brescia, Italy — [2]Laboratorio nazionale TASC INFM-CNR, Area Science Park, Basovizza S.S. 14 Km 163.5, IT-34012 Trieste, Italy

We fabricate a structurally new form of graphene, namely curved graphene sheets, synthesized by chemical vapor deposition on HOPG. Scanning tunneling microscopy shows that the CGS has grown at the edges of topmost graphene bilayers.

12:50 – 14:40: Lunch Break

14:40 – 16:20

THU3F1: Surface, Interface and Low-Dimensional Physics (Shared with Semiconductor Physics) - Surface: Nanostructures

Chair: S. Krischok, Technische Universität Ilmenau, Ilmenau, Germany

Aula 3

via G. Campi 213/a, 41100 Modena, Italy — [2]Dipartimento di Fisica, Università di Modena e Reggio Emilia, via G. Campi 213/a, 41100 Modena, Italy — [3]Dipartimento di Fisica, Università di Ferrara, via G. Saragat 1, 44100 Ferrara, Italy

We present the results of a morphological and magnetic study of Ni nanoparticles ultrathin films. The films grow in random paving mode, with evidence of two regimes: collective blocking (T<70 K) and reversibility (T>70 K).

THU2F3.4 12:30

Coercivity drop in exchange biased Co nanowires induced by antiferromagnetic fluctuations — •Thomas Maurer[1], Frédéric Ott[1], Grégory Chaboussant[1], Yaghoub Soumare[2], Jean-Yves Piquemal[2], and Guillaume Viau[3] — [1]Laboratoire Léon Brillouin CEA/CNRS UMR12 , Centre d'Etudes de Saclay, 91191 Gif sur Yvette, France — [2]ITODYS Université Paris 7- Denis Diderot, UMR CNRS 7086 2, place Jussieu 75251 cedex 05 Paris, France — [3]Laboratoire de Physique et Chimie des Nano-Objets, INSA de Toulouse, UMR CNRS 5215, 135 av. de Rangueil 31077 Toulouse Cedex 4, France

The magnetic propeties of oxidized ferromagnetic Co-Ni nanowires have been investigated. The temperature dependence of the coercive and exchange bias fields shows the correlation of exchange bias and superparamagnetic fluctuations of antiferromagnetic CoO grains.

12:50 – 14:40: Lunch Break

14:40 – 16:20

THU3F3: Magnetism - Magnetic Properties and Structures II

Chair: R.M. Galera, Institut Neel, CNRS/UJF, Grenoble, France

Aula 4

University of Rome "La Sapienza", P. le Aldo Moro 5, I-00185, Rome, Italy — [3]DPMC- MaNEP University of Geneva, 24 Quai Ernest-Ansermet CH-1211, Geneve 4, Switzerland

We investigate the role of the vortex-core energy on the occurrence of non-universal Kosterlitz-Thouless physics in layered anisotropic systems and in 2D systems at finite magnetic fields.

THU2F4.4 12:30

Dynamic interactions between coexisting vortex species in highly anisotropic high temperature superconductors — •Mauro Tesei[1], Garry Perkins[1], David Caplin[1], Lesley Cohen[1], and Tsuyoshi Tamegai[2] — [1]The Blackett Laboratory, Imperial College, London SW7 2BZ, UK — [2]Department of Applied Physics, The University of Tokyo, Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

The contribution has been withdrawn by the authors.

12:50 – 14:40: Lunch Break

14:40 – 16:20

THU3F4: Superconductivity and Highly-Correlated Systems - Theoretical Methods for Many Body Computation

Chair: L. Benfatto, Centro Studi e Ricerche Enrico Fermi, Rome, Italy

Aula 6

St. Petersburg, Russia

We studied spectra of adjacency matrix and of Laplacian for uncorrelated random network with arbitrary degree distribution, founding minimal degree of the vertex to be most important network's characteristics.

THU2F6.3 12:30

Bosonic behaviour in weighted networks — •Diego Garlaschelli[1] and Maria Immacolata Loffredo[2] — [1]Dipartimento di Fisica, Università di Siena, Via Roma 56, 53100 Siena, Italy — [2]Dipartimento di Scienze Matematiche ed Informatiche, Università di Siena, Pian dei Mantellini 44, 53100 Siena, Italy

We show that, in contrast with what expected, weighted networks display strong residual structural correlations after randomization. We fully characterize these correlations analytically in terms of Bose statistics. New unbiased weighted definitions are therefore necessary.

12:50 – 14:40: Lunch Break

14:40 – 16:00

THU3F6: Physics of Socio-Economic and Complex Systems - Ecosystems and Other Applications

Chair: J. Kertesz, Budapest University of Technology and Economics, Budapest , Hungary

Aula Magna

THU3M.1 (Invited) 14:40

Chiral purification using Ostwald ripening — •Elias Vlieg[1], Wim Noorduin[1], Hugo Meekes[1], Willem van Enckevort[1], Toshiko Izumi[2], Donna Blackmond[2], Alessia Millemaggi[3], Bernard Kaptein[3], Michel Leeman[4], and Richard Kellogg[4] — [1]Radboud University Nijmegen, The Netherlands — [2]Imperial College, London, UK — [3]DSM, Geleen, The Netherlands — [4]Syncom BV, Groningne, The Netherlands

We have found a method based on attrition-enhanced Ostwald ripening to produce crystals of single handedness starting from a mixture of left and right-handed crystals.

THU3M.2 15:20

Formation of ultrathin copper sulfide films on Au(100) from solution — •Christian Schlaup[1], Peter Broekmann[2], and Klaus Wandelt[1] — [1]Institute of Physical and Theoretical Chemistry, University of Bonn, Wegelerstr. 12, D-53115, Bonn, Germany — [2]BASF Aktiengesellschaft, G-CAE/WED-M320, D-67056 Ludwigshafen, Germany

ElectroChemical Atomic Layer Epitaxy (ECALE), a promising route towards ultrathin compound films, was applied to prepare Cu-sulfide films on Au(100). Structure, stoichiometry and stability of these films was determined with in-situ STM and cyclic voltammetry.

Aula Amaldi

THU3A.1 14:40

What is the main factor which determines the extent of N induced disorder in the band structure of III-V dilute nitride semiconductor alloys? — Andrew Lindsay[1] and •Eoin O'Reilly[1,2] — [1]Tyndall National Institute, Lee Maltings, Cork, Ireland — [2]Department of Physics, University College Cork, Cork, Ireland

We show that the main factor determining the extent of N-disorder in the conduction band states is the energies of basic key N-clusters and where they lie in relation to the host conduction band edge.

THU3A.2 15:00

Hydrogen behavior in InN — •Giorgio Pettinari[1], Antonio Polimeni[1], Mario Capizzi[1], Vadim Lebedev[2], Volker Cimalla[2], Oliver Ambacher[2], Maria Losurdo[3], Giovanni Bruno[3], Tong-Ho Kim[4], Soojeong Choi[4], and April Brown[4] — [1]CNISM-Dipartimento di Fisica, Sapienza Università di Roma, P.le A. Moro 2, 00185 Roma, Italy — [2]Fraunhofer Institute for Applied Solid State Physics, Tullastr. 72, 79108 Freiburg, Germany — [3]Institute of Inorganic Methodologies and of Plasmas, IMIP-CNR, via Orabona 4, 70125 Bari, Italy — [4]Electrical and Computer Engineering Department, Duke University, 27708 Durham, NC USA

The effects of hydrogen incorporation in InN are reported. Hydrogen leads to an increase of the carrier concentration by two orders of magnitude and to a dramatic opening of the bandgap by about 0.5eV.

THU3A.3 15:20

Tunable Photonics with Optically Driven Color Centers in Diamonds. — Jin Hui Wu[1], •Giuseppe La Rocca[2], and Maurizio Artoni[3] — [1]department of physics, jilin university, changchung, china — [2]scuola normale superiore, pisa, italy — [3]department of chemistry and physics of materials, university of brescia, italy

Inhomogeneously broadened optical transitions of nitrogen-vacancy centers in diamond may be employed to attain all-optically tunable photonic band-gap structures that can be devised to improve light storage efficiencies in solids quantum memory devices.

Aula Conversi

THU3C.1 (Invited) 14:40

Dynamics of Asymmetric Polymer Blends — •Juan Colmenero — Centro de Fisica de Materiales (CSIC-UPV/EHU), Apartado 1072, 20080 San Sebastian, Spain

Miscible polymer blends where the two components have very different time scales for segmental dynamics (dynamic asymmetry) show very peculiar dynamic features. Here we summarize the results obtained by neutron scattering and molecular dynamics simulations.

THU3C.2 15:20

Kinetics of Intramolecular Contact Formation in Disordered Peptides and Unfolded Proteins — •Marco Buscaglia, Andrea Soranno, and Tommaso Bellini — Dipartimento di Chimica, Biochimica e Biotecnologie per la Medicina, Università degli Studi di Milano, via F.lli Cervi 93, 20090 Segrate (Milano), Italy

Quenching of the triplet state of tryptophan after nanosecond laser excitation is used to probe the rate of intra-chain contact formation in disordered peptides and in the unfolded state of simple proteins.

Aula 1

THU3F1.1 14:40

Selective Ge nano island growth on Ga terminated vicinal silicon surfaces — Moritz Speckmann[1], Thomas Schmidt[1], Torben Clausen[1], Jan Ingo Flege[2], Peter Sutter[2], Andrea Locatelli[3], Stefan Heun[4], and •Jens Falta[1] — [1]University of Bremen, Bremen, Germany — [2]Brookhaven National Laboratory, Upton (NY), United States — [3]Sincrotrone ELETTRA, Trieste, Italy — [4]TASC INFM-CNR, Trieste, Italy

Ga adsorption can be used to tune Ge growth on vicinal silicon surfaces. For Si(113) and Si(112) the impact of growth temperature on the Ge island shape, size and density will be presented.

THU3F1.2 15:00

Non-equilibrium superconducting proximity effect in interacting quantum dots — •Michele Governale[1], Marco G. Pala[2], and Jürgen König[1,3] — [1]Institut für Theoretische Physik III, Ruhr-Universität Bochum, 44780 Bochum, Germany — [2]IMEP-LAHC-MINATEC (UMR CNRS/INPG/UJF 5130), 38016 Grenoble, France — [3]Theoretische Physik, Universität Duisburg-Essen, 47048 Duisburg, Germany

We investigate transport through a three-terminal setup, consisting of a quantum dot tunnel coupled to two phase-biased superconducting leads and one voltage-biased normal lead, by means of a real-time diagrammatic theory.

THU3F1.3 15:20

Generation of indistinguishable photons from non-identical quantum dots — Emiliano Cancellieri[1,2], •Filippo Troiani[2], and Guido Goldoni[2,3] — [1]Scuola Normale Superiore, Pisa, Italy — [2]CNR-INFM Research Center "S3", Modena, Italy — [3]Univ. of Modena, Modena, Italy

We theoretically address the problem of generating indistinguishable photons from different semiconductor quantum dots. We show that this can be obtained via cavity-assisted Raman transitions, by optimal design of the driving laser pulses.

Aula 3

THU3F3.1 14:40

Spin dynamic and magnetic phase transition in quasi two-dimensional $Mn[C_{10}H_6(O)(COO)]_2$*2H_2O — Konstantin Dergachev, Mikchail Kobets, •Eugene Khatsko, Vitalij Khrustalev, and Volodimir Pashchenko — Institute for Low temperature Physics 47 Lenin Ave. 31103 kharkov, Ukraine

EPR spectrum and magnetic properties of the antiferromagnet Mn[C_10H_6(OH)(COO)]_2*2H_2O are studied. Spin relaxation process parameters were found in high temperature limit.The spin-reorientations magnetic phase transitions was studied in pulse magnetic field.

THU3F3.2 15:00

Cubic helimagnets in magnetic field and at pressure — •Sergey Maleyev — Petersburg Nuclear Physics Institute, Gatchina, St. Petersburg 188300, Russia

Magneto-elastic interaction in cubic helimagnets is considered. Lattice deformation, anisotropic energy and negative contribution to spin-wave gap are calculated. Origin of quantum phase transition in MnSi is discussed.

THU3F3.3 15:20

Mechanisms of spin-mixing instabilities in antiferromagnetic molecular wheels — Alessandro Soncini and •Liviu Chibotaru — Division of Quantum and Physical Chemistry , University of Leuven, Leuven, Belgium

The microscopic theory of field-induced spin-mixing instabilities in antiferromagnetic molecular wheels, fully accounting for the main experimental features in CsFe8, is proposed. It includes field-dependent permanent and vibronic mixing and phonon interactions.

Aula 4

THU3F4.1 14:40

Multigrid Hirsch-Fye quantum Monte Carlo method for dynamical mean-field theory — •Nils Blümer — Institute of Physics, Johannes Gutenberg University, 55099 Mainz, Germany

We present a new numerically exact impurity solver for dynamical mean-field theory, based on a multigrid implementation of the established Hirsch-Fye quantum Monte Carlo algorithm. High efficiency and precision are demonstrated at very low temperatures.

THU3F4.2 15:00

Dual fermion approach to susceptibility of correlated lattice fermions — •Hartmut Hafermann[1], Sergey Brener[1], Alexei N. Rubtsov[2], Mikhail I. Katsnelson[3], and Alexander I. Lichtenstein[1] — [1]I. Institute of Theoretical Physics, University of Hamburg, 20355 Hamburg, Germany — [2]Department of Physics, Moscow State University, 119992 Moscow, Russia — [3]Institute for Molecules and Materials, Radboud University of Nijmegen, 6525 AJ Nijmegen, The Netherlands

We propose a scheme to calculate susceptibilities within the dual fermion approach to nonlocal correlations. For the 2D Hubbard model, the critical Néel temperature is suppressed compared to DMFT by the incorporation of the fluctuations.

THU3F4.3 15:20

The Dynamical Vertex Approximation: spatial correlations beyond Dynamical Mean Field Theory — •Alessandro Toschi[1], Andrey Katanin[1,2], and Karsten Held[1,3] — [1]Max Planck Insitute for Solid State Physics, Stuttgart, Germany — [2]Institute of Metal Physics, Ekaterininburg, Russia — [3]Institute for Solid State Physics, Vienna University of Technology, Vienna, Austria

Treating spatial correlations beyond DMFT is at the frontier of condensed-matter research. Our new approach, coined dynamical vertex approximation (DΓA), allows for the inclusion of long-range correlations and is, hence, complementary to cluster-DMFT schemes.

Aula 6

THU3F6.1 (Invited) 14:40

Three-dimensional reconstruction of starling flocks: an empirical investigation of collective animal behaviour. — •Irene Giardina — SMC Centre CNR-INFM, Dept. of Physics, University of Rome La Sapienza, P.le A. Moro 2, 00185 Rome, Italy

We measured for the first time the 3D positions of individual birds in starling flocks of thousands elements. We analyzed the properties of the groups and unveiled the nature of the mutual interaction between individuals.

THU3F6.2 15:20

Statistical modeling of wind velocity: individual and collective perspective — Saverio Bivona, •Giovanni Bonanno, Riccardo Burlon, Davide Gurrera, and Claudio Leone — Dipartimento di Fisica e Tecnologie Relative - Università degli studi di Palermo - Viale delle Scienze - Ed.18 - I-90128 Palermo - Italy

We discuss univariate and multivariate statistical properties of wind velocities recorded at different locations in Sicily. We show that tools of complex systems can be used to reproduce properties of the investigated time series.

Aula Magna

THU3M.3 15:40

Liquid water-Au(111) interface: Insights by classical molecular dynamics simulations. — •Stefano Corni[1], Arrigo Calzolari[1], Alessandra Catellani[2], and Francesco Iori[3] — [1]CNR-INFM S3 National Research Center on nanoStructures and bioSystems at Surfaces, IT- 41100 Modena, Italy — [2]CNR-IMEM Istituto dei Materiali per l'Elettronica ed il Magnetismo, IT- 43010 Parma, Italy — [3]Dept. of Physics, University of Modena and Reggio Emilia, IT- 41100 Modena, Italy

The water - Au(111) interface is fundamental for several phenomena, including protein-surface interactions mediated by water. We performed classical molecular dynamics simulations of this system, analyzing gold wettability in terms of the surface water structure.

THU3M.4 16:00

Diffusive dynamics of interacting polarons in organic single-crystal transistors with highly polarizable gate dielectrics — •Sergio Ciuchi[1] and Simone Fratini[2] — [1]SMC Center and Dipartimento di Fisica Università dell'Aquila, via Vetoio, I-67010 Coppito-L'Aquila, Italy — [2]Institut Néel - CNRS and Université Joseph Fourier BP 166, F-38042 Grenoble Cedex 9, France

We explain source-drain characteristics of single crystal rubrene-based FETs with a strongly polarizable gate dielectric by means of diffusive transport of mutually interacting electrons in the presence of strong electron-phonon interactions.

Aula Amaldi

THU3A.4 15:40

Detection of near to mid infrared light with an organic/inorganic hybrid hetero–junction — •Gebhard Matt[1], Thomas Fromherz[2], Christoph Lungenschmied[3], Guillaume Goncalves[4], Mateusz Bednorz[2], Saeed Zamiri[5], Serdar Niyazi Sariciftci[1], and Günther Bauer[2] — [1]Linz Institute for Organic Solar Cells (LIOS), Johannes Kepler University, Austria — [2]Institute for Semiconductor and Solid State Physics, Johannes Kepler University, Austria — [3]Konarka Technologies, Linz — [4]Ecole Nationale Superieure de Chimie et de Physique de Bordeaux (ENSCPB) — [5]Christian Doppler Laboratory for Surface Optics, Johannes Kepler University, Austria

Here we report on a novel IR light sensing device (1.1-3 μm) based on a silicon/fullerene hetero–junction. It will be shown that the nature of the interface causes the IR photo–current.

THU3A.5 16:00

Optical Conductivity of Polarons: Analytic Approaches — •Jozef T. Devreese and Serghei N. Klimin — Theoretische Fysica van de Vaste Stoffen (TFVS), Universiteit Antwerpen, B-2020 Antwerpen, Belgium

Recent optical measurements of perovskite materials stimulate a new interest to polarons. We have derived an analytically exact in the strong-coupling limit polaron optical conductivity, which is in a good agreement with Monte Carlo results.

Aula Conversi

THU3C.3 15:40

Predictive Monte Carlo: Multipoles Meet Equations Of State — •Frank Heilmann — BASF SE, 67056 Ludwigshafen, Germany

Bead-spring models including multipoles for monomers/oligomers are presented. Pure substance data is reproduced extremely accurately. Mixture data is predicted. Monte Carlo simulations are mapped onto an equation of state. Density-of-states-based MC is employed.

THU3C.4 16:00

Molecular visualization of polymer crystal growth — •Wenbing Hu — School of Chemistry and Chemical Engineering, Nanjing University, Nanjing, China

We report molecular simulations of polymer crystal growth exhibiting molecular segregation, regime transitions, self-poisoning, and co-crystallization of binary mixtures of different chain lengths, which provide us more insights into the kinetics of polymer crystal growth.

Aula 1

THU3F1.4 15:40

Spin-orbit Induced Triplet-singlet Relaxation of Multielectron Spin States in Cylindrical Quantum Dots — •Andrea Bertoni[1], Juan Climente[1], Guido Goldoni[1,2], Massimo Rontani[1], and Elisa Molinari[1,2] — [1]INFM-CNR S3 National Research Center, Modena, Italy — [2]Dipartimento di Fisica, Università di Modena e Reggio Emilia, Modena, Italy

Triplet-singlet relaxation in cylindrical quantum dots containing few interacting electrons is studied numerically via direct diagonalization of Coulomb and spin-orbit interactions. The transitions induced by the coupling with phonons can be tailored by magnetic fields.

THU3F1.5 16:00

From defect-engineering to nanostructuring and polarization control of dilute nitride semiconductors — •Rinaldo Trotta — CNISM-Dipartimento di Fisica, Sapienza Università di Roma, P.le A. Moro 2, 00185 Roma, Italy

Hydrogen-based defect-engineering of dilute nitrides (GaAsN) is employed to fabricate novel nanostructures and to control the polarization of emitted photons via tailoring the strain fields exerted at the interfaces between hydrogen-free and hydrogen-containing planar regions.

Rettorato

16:30 – 18:40

Superconductivity and Highly-Correlated Systems - Poster Session

THUp.SUP.1 16:30

Several Interesting Things — •Massimo Capone[1], Luca de' Medici[2], Alessandro Toschi[3], and Giorgio Sangiovanni[3] — [1]SMC, CNR-INFM and University of Rome La Sapienza, Piazzale Aldo Moro 2, 00185, Roma — [2]Rutgers University, Piscataway, NJ USA — [3]Max Planck Institut Stuttgart, Stuttgart, Germany

We theoretically analyze some of the anomalies of the optical sumrules in the high-temperature superconductor. We find many nice things that you can find in the extended abstract

THUp.SUP.2 16:30

Persistent current stabilization in high-Tc superconductors — •Iria Quelle[1], Higinio González-Jorge[2], Luís Romaní[1], and Gerardo Domarco[1] — [1]Dpto. Física Aplicada, Universidad de Vigo, Facultad de Ciencias, As Lagoas, 32004 Ourense. Spain — [2]Dpto. de I+D, Laboratorio Oficial de Metroloxía de Galicia, Parque Tecnolóxico de Galicia, San Cibrao das Viñas s/n, 32901 Ourense. Spain

Flux creep phenomenon over a long time period in high-TC superconducting rings was studied. A current was induced in samples by a field-cooling procedure and the resulting current decay was measured using a Hall probe.

THUp.SUP.3 16:30

Extrinsic Carrier Self-Trapping in the Anisotropic Polar Materials — •Ermuhammad Dushanov[1,2], Safarali Dzhumanov[2], and Alexandr Ayriyan[1] — [1]Joint Institute for Nuclear Research, Dubna, Russia — [2]Institute of Nuclear Physics, Tashkent, Uzbekistan

Using the continuum model and adiabatic approximation, the ground-state energies of doped holes in the hole-doped cuprates are calcu-

Thursday

Aula 3

THU3F3.4 15:40

Stripe Domains and Spin Reorientation Transition in FeSiB Thin Films Produced by RF Sputtering — •Marco Coisson, Franco Vinai, Paola Tiberto, and Federica Celegato — INRIM, Electromagnetism Division, Strada delle Cacce 91, 10135 Torino (TO), Italy

Spin reorientation transition and perpendicular magnetic anisotropy in FeSiB amorphous thin films have been tailored by varying preparation conditions, thickness and resulting stresses. A vector model provides full understanding of in- and out-of-plane anisotropy roles.

THU3F3.5 16:00

Giant Magnetostriction of Composite — •Gildas Diguet[1], Eric Beaugnon[2], and Jean-Yves Cavaille[3] — [1]C.R.E.T.A., C.N.R.S. 25 avenue des martyrs 38042 Grenoble, France — [2]C.R.E.T.A., C.N.R.S. 25 avenue des martyrs 38042 Grenoble, France — [3]M.A.T.E.I.S, I.N.S.A. Batiment Blaise Pascal, 7 avenue Jean Capelle, 69621 Villeurbanne cedex, France

Ferromagnetic particles embedded within an elastic, matrix submitted to an external and homogenous magnetic field show an apparent magnetostriction. Dipolar forces calculation in the composite has been performed and fitted the measured data.

Aula 4

THU3F4.4 15:40

Universality classes for Coulomb-frustrated phase separation — Carmine Ortix[1,2,3], •José Lorenzana[3], and Carlo Di Castro[3,4] — [1]Institute-Lorentz for Theoretical Physics, Universiteit Leiden, Postbus 9506 2300 RA Leiden, The Netherlands — [2]Dip. di Fisica Universitá del Salento and INFN Sez. di Lecce, Via per Arnesano, 73100 Lecce, Italy — [3]SMC-INFM, ISC-CNR, Dip. di Fisica Universitá degli Studi di Roma "La Sapienza", P. Aldo Moro 2, 00185 Roma, Italy — [4]Dip. di Fisica Universitá degli Studi di Roma "La Sapienza", P. Aldo Moro 2, 00185 Roma, Italy

We discuss universal aspects of Coulomb-frustrated phase separation in negative short-range compressibility systems and systems with a cusp singularity in the energy. Both situations often arise in strongly correlated electronic systems.

THU3F4.5 16:00

Characterization of coherent impurity effects in solid state qubits — •Elisabetta Paladino[1], Maura Sassetti[2], Giuseppe Falci[1], and Ulrich Weiss[3] — [1]MATIS CNR-INFM, Catania & Dipartimento di Metodologie Fisiche e Chimiche, Universita' di Catania, 95125 Catania, Italy. — [2]Dipartimento di Fisica, Universita' di Genova & LAMIA CNR-INFM, 16146 Genova, Italy. — [3]II. Institut fuer Theoretische Physik, Universitaet Stuttgart, D-70550 Stuttgart, Germany.

We characterize effects of coherent impurities in solid state qubits. Signatures of impurity non-Gaussian behavior and quantum back-action effects are identifed. In an alternative perspective the qubit acts as measurement device for the impurity.

Aula 6

THU3F6.3 15:40

Lévy flight in a two competing species dynamics — •Davide Valenti[1], Angelo La Cognata[1], Bernardo Spagnolo[1], and Alexander Dubkov[2] — [1]Dipartimento di Fisica e Tecnologie Relative, Università di Palermo and CNISM-INFM, Unità di Palermo, Group of Interdisciplinary Physics, Viale delle Scienze, I-90128 Palermo, Italy — [2]N.I. Lobachevsky State University of Nizhniy Novgorod, 23 Gargarin Ave., Nizhniy Novgorod 603950, Russia

We analyze the dynamics of two competing species described by generalized Lotka-Volterra equations, with random interaction parameter and multiplicative Lévy noise. Mean extinction time of one species is analyzed as a function of noise intensity.

Rettorato

lated variationally, treating the short- and long-range carrier-phonon, carrier-dopant and dopant-phonon interactions, and correlation between the pairing carriers.

THUp.SUP.4 16:30

Thermodynamics and finite temperature phase diagram of hard core bosons on 2D lattices — Tatiana Antsygina, •Marina Poltavskaya, Igor Poltavsky, and Konstantin Chishko — B. Verkin Institute for Low Temperature Physics and Engineering, 47 Lenin Ave., 61103 Kharkov, Ukraine

Thermodynamic functions and phase diagrams of hard-core bosons on 2D lattices are calculated analytically using two-time Green function formalism. The repulsion between nearest neighbors and the attraction between next nearest neighbors are taken into account.

THUp.SUP.5 16:30

Luttinger liquid state with effective attractive hard-core interaction — •Igor Karnaukhov — Institute of Metal Physics, Vernadsky Street 36, 03142 Kiev, Ukraine

A model of coupled free-fermion chains is proposed and solved exactly by the means of the Bethe ansatz. An effective attractive hard-core interaction induces a new phase state of the coupled chains.

THUp.SUP.6 16:30

An Equation of State for Low and High Energy BEC — •Vito Barbarani — EPS member, via delle Panche 140, 51100 Florence, Italy

This work investigates how energy depends on the two-body interaction potential in Bose-Einstein condensation (BEC) phenomena. A general relation is obtained which is valid both for low and high energy BEC.

THUp.SUP.7 16:30

Electronic structure of strongly correlated electrons and mechanisms of high temperature superconductivity in cuprates — •Sergey Ovchinnikov[1,2], Vladimir Gavrichkov[1,2], Maksim Korshunov[1,3], and Elena Shneyder[1] — [1]L.V. Kirensky Institute of Physics, Siberian Branch of RAS, Krasnoyarsk, 660036, Russia — [2]Siberian Federal University, av. Svobodnyi 79, Krasnoyarsk 660041, Russia — [3]Max-Planck-Institut fur Physik Komplexer Systeme, Nothnitzer Str. 38, D-01187 Dresden, Germany

Electronic structure of LSCO is calculated with LDA+GTB approach in the regime of strong correlations. The low energy effective Hamiltonian has the form of t-t*-t*-J* model. Magnetic and phonon mechanism of pairing are discussed.

THUp.SUP.8 16:30

On high critical currents in high-pressure synthesized magnesium diboride -based superconductors — •Tatiana Prikhna[1], Wolfgang Gawalek[2], Harald Weber[3], Yaroslav Savchuk[1], Michael Wendt[2], Sergey Dub[1], Viktor Moshchil[1], Nina Sergienko[1], Tobias Habisreuther[2], Michael Eisterer[3], Christa Schmidt[2], Doris Litzkendorf[2], and Jan Dellith[2] — [1]Institute for Superhard Materials of the National Academy of Sciences of Ukraine, 2 Avtozavodskaya Street, Kiev, 04074, Ukraine, prikhna@mail.ru, prikhna@iptelecom.net.ua — [2]Institut fuer Photonische Technologien,, Albert-Einstein-Strasse 9, Jena, D07745, Germany, gawalek@ipht-jena.de — [3]Atomic Institute of the Austrian Universities, 1020 Vienna, Austria, weber@ati.ac.at

The reasons for the high critical current origination in magnesium diboride*- based superconductors synthesized under high pressure (2 GPa) - high temperature (1073K -1323K) without and with Ti, Ta, SiC additions are under consideration.

THUp.SUP.9 16:30

Electronic transport in carbon nanotubes: Luttinger Liquids and correlated superconductivity — •Stefano Bellucci, Michele Cini, Pasquale Onorato, and Enrico Perfetto — INFN-Laboratori Nazionali di Frascati

We consider the crossover between Coulomb Blockade and Luttinger Liquid regime in Carbon Nanotubes, and magnetic field effects on the latter behavior. We discuss if a superconducting behavior can arise by a purely electronic mechanism

THUp.SUP.10 16:30

Vortices on spherical superconducting nanoshells — Jacques Tempere[1,2], Vladimir Gladilin[1,3], Isaac Silvera[2], •Jozef Devreese[1], and Victor Moshchalkov[3] — [1]TFVS, Universiteit Antwerpen, Groenenborgerlaan 171, 2020 Antwerpen, Belgium — [2]Lyman Laboratory of Physics, Harvard University, Cambridge, Massachusetts 02138, USA — [3]INPAC, K.U. Leuven, Celestijnenlaan 200 D, B-3001 Leuven, Belgium

Using the time-dependent Ginzburg-Landau equations, we derive phase diagrams for different vortex states on spherical superconducting shells, analyze the topological flux pinning, and examine the decay of giant and ring-like vortices into a vortex lattice.

THUp.SUP.11 16:30

Spin-vibronic superexchange and dynamical vibronic order in ammoniated cubic fullerides — •Liviu Chibotaru — Division of Quantum and Physical Chemistry and INPAC, University of Leuven, Leuven, Belgium

The ground state and low-lying excitations in the cubic fulleride Li3(NH3)6 C60 are governed by a new type of exchange interaction, the spin-vibronic superexchange between neighbour fullerene sites.

THUp.SUP.12 16:30

Quasiparticle evolution and pseudogap formation in V_2O_3 — •Giorgio Sangiovanni[1], Alessandro Toschi[1], Philipp Hansmann[1], Karsten Held[1,2], Massimo Capone[3,4], Leonetta Baldassarre[5,6], Andrea Perucchi[5,7], Daniele Nicoletti[5], Michele Ortolani[8], and Stefano Lupi[5] — [1]Max-Planck Institut für Festkörperforschung, Heisenbergstr. 1, D-70569 Stuttgart, Germany — [2]Institute for Solid State Physics, Vienna University of Technology, 1040 Vienna, Austria — [3]SMC, CNR-INFM and Dipartimento di Fisica, Università di Roma "La Sapienza", Piazzale Aldo Moro 2, I-00185 Roma, Italy — [4]ISC-CNR, Via dei Taurini 19, Roma, Italy — [5]CNR-INFM COHERENTIA and Dipartimento di Fisica, Università di Roma "La Sapienza", Piazzale Aldo Moro 2, I-00185 Roma, Italy — [6]Experimentalphysik 2, Universität Augsburg, D-86135 Augsburg, Germany — [7]Sincrotrone Trieste S.C.p.A., S.S. 14 Km 163.5, in Area Science Park, 34012 Basovizza Trieste, Italy — [8]Istituto di Fotonica e Nanotecnologie, IFN-CNR, Via Cineto Romano 42, 00156 Roma, Italy

We measure the infrared conductivity of V_2O_3 and observe a pseudogap above 425K. Using LDA+DMFT we show that V_2O_3 is driven from the metallic to the insulating side of the Mott transition as temperature increases.

THUp.SUP.13 16:30

Ab-initio hole localization and singlet polaron in 1D cuprates — •Alessio Filippetti and Vincenzo Fiorentini — CNR-INFM-SLACS and Physics Dept., Cagliari University, Italy

We present an ab-initio band-theory-based description of spin-compensated polarons in the 1D hole-doped cuprate CaYCuO. They turn the insulating undoped antiferromagnet into a gap insulator, a metallic paramagnet, and finally an insulating diamagnet.

THUp.SUP.14 16:30

Fermi-surface evolution across the magnetic phase transition in the Kondo lattice model. — •Paolo Barone[1], Michele Fabrizio[1,2], and N. Lanata[1] — [1]International School for Advanced Studies (SISSA) and CNR-INFM-Democritos National Simulation Centre, Via Beirut 2-4 34014 Trieste, Italy — [2]The Abdus Salam International Center for Theoretical Physics (ICTP), P.O. Box 586, I-34014 Trieste, Italy

We derive the phase diagram of the Kondo lattice model by means of an extended Gutzwiller wavefunction. We find that generically the model displays an f-electron Mott localization which may disentangle from the onset of magnetism.

THUp.SUP.15 16:30

Characterization of the quantum Phase diagram of the one-dimensional bond-charge extended Hubbard model — •Alberto Anfossi[1,2], Arianna Montorsi[1], and Cristian Degli Esposti Boschi[2] — [1]Dipartimento di Fisica del Politecnico and CNISM, Corso Duca degli Abruzzi 24, I-10129 Torino, Italy — [2]Dipartimento di Fisica, Università di Bologna, viale C. Berti-Pichat 6/2, I-40127 Bologna, Italy

We characterize the zero-temperature quantum phase diagram of the one-dimensional bond-charge extended Hubbard model at half-filling.

THUp.SUP.16 16:30

Thermopower of Yb1-xCexInCu4 alloys — •Tatyana Voloshok, Vladimir Pryadun, and Nikolay Mushnikov — Moscow State University, moscow 119991, russia

The thermopower measurements of Yb1-xCexInCu4 alloys (x = 0, 0.12, 0.16, 0.20) were performed in a temperature range 4 * 170 K. It was found that the substitution of Yb-ions by Ce-ions lead to the change of the thermopower sign.

THUp.SUP.17 16:30

Pair tunneling and shot noise through a single molecule — •Rosa Lopez — Departament de Fisica, Universitat de les Illes Balears, 07122-Palma de Mallorca (Spain)

We investigate electronic transport through a single molecule in a strong electron-phonon coupling regime and propose an experimental set-up to enhance the visibility of pair tunneling effects.

THUp.SUP.18 16:30

Correlated thermal fluctuations in short and long Josephson junctions — •Giuseppe Augello, Davide Valenti, and Bernardo Spagnolo — Dipartimento di Fisica e Tecnologie Relative, Università di Palermo, and CNISM-INFM, Unità di Palermo, Group of Interdisciplinary Physics, Viale delle Scienze, I-90128 Palermo, Italy

We analyze the effects of a colored noise source on the transient dynamics of a short overdamped Josephson junction subject to periodic signal, and a long Josephson junction within the framework of the sine-Gordon approach.

THUp.SUP.19 16:30

Nonmonotonic Flux-Flow in Inhomogeneous Superconductors below the Percolation Threshold — •Viorel Sandu — National Institute of Materials Physics, Magurele, 077125 Romania

Flux flow resistivity above critical temperature is analyzed based on increased evidences that high temperature superconductors are intrinsically inhomogeneous and local nonpercolating superconducting domains persist far above critical temperature.

THUp.SUP.20 16:30

Condensed matter properties in 6d — •Enzo Bonacci — Institute of Physics, MInstP

Rettorato

Condensed Cooper Pairs and gravitomagnetic anomalies may find a unitary explanation in a 6d reference frame after some recent proofs of time's three-dimensionality leading to the consequent six-dimensional extension of Einstein field equations.

THUp.SUP.21 16:30

Annealing and Nanoparticle Doping Effects on Superconducting and Normal-state Properties of MgB2 Bulk Samples grown by Reactive Mg Liquid Infiltration Technique — •Laura Gozzelino[1], Bruno Minetti[1], Giovanni Alberto Ummarino[1], Roberto Gerbaldo[1], Gianluca Ghigo[1], Francesco Laviano[1], Giuseppina Lopardo[1], Giovanni Giunchi[2], Elena Perini[2], Enrico Bassani[3], Angelo Agostino[4], and Enrica Mezzetti[1] — [1]Dept of Physics, Politecnico di Torino, C.so Duca degli Abruzzi, 24, 10129 Torino, Italy — [2]EDISON SpA, R&D Dept., Foro Buonaparte 31, 20121 Milano, Italy — [3]CNR-IENI, Laboratorio di Lecco, C.so Promessi Sposi 29, 23900 Lecco, Italy — [4]Dept. of General and Organic Chemistry, Università di Torino, v. Giuria 7, 10125 Torino, Italy

Irreversibility and upper critical fields as well as pinning energy of as-grown, annealed, SiC and Zn doped MgB2 samples are compared. Normal-state resistivities are also analyzed to study the disorder effects on electron transport properties.

THUp.SUP.22 16:30

Nonlinear effects in MgB2 microwave resonators — •Gianluca Ghigo[1,2], Domenico Andreone[3], Roberto Gerbaldo[1,2], Laura Gozzelino[1,2], Francesco Laviano[1,2], Giuseppina Lopardo[1,2], Bruno Minetti[1,2], Eugenio Monticone[3], Chiara Portesi[3], and Enrica Mezzetti[1,2] — [1]Dipartimento di Fisica, Politecnico di Torino, C.so Duca degli Abruzzi 24, 10129 Torino, Italy — [2]Istituto Nazionale di Fisica Nucleare, Sez. Torino, via P. Giuria 1, 10125 Torino, Italy — [3]INRIM, strada delle Cacce 91, 10135 Torino, Italy

Nonlinear effects in magnesium diboride thin films are investigated in the microwave regime by a coplanar resonator technique, with particular focus on vortex-avalanche-induced and on weak-link-induced jumps in the resonance curves

THUp.SUP.23 16:30

Chain metallicity and antiferromagnetism-paramagnetism competition in underdoped YBa$_2$Cu$_3$O$_{6+x}$: a first principles description — •Giorgia Lopez[1], Mauro Mantega[2], Alessio Filippetti[1], and Vincenzo Fiorentini[1] — [1]CNR-INFM-SLACS and Physics Dept., Cagliari University, Italy — [2]Trinity College Dublin, Ireland

We describe ab initio the metal-insulator transition in underdoped YBCO(6+x). Chains are always ordered and metallic, while CuO2 planes are insulating antiferromagnetic up to x=0.25.The x-dependent in-plane antiferromagnetic-paramagnetic and chain order-disorder transitions are uncoupled.

THUp.SUP.24 16:30

Localized nanostructuring of functional superconducting YBa2Cu3O7-x films — •Roberto Gerbaldo[1,2], Gianluca Ghigo[1,2], Laura Gozzelino[1,2], Francesco Laviano[1,2], Bruno Minetti[1,2], Roberto Cherubini[3], Alberto Rovelli[4], and Enrica Mezzetti[1,2] — [1]Department of Physics, Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129 Torino, Italy — [2]INFN - Sez. Torino, Via P. Giuria 1, 10125 Torino, Italy — [3]INFN - Laboratori Nazionali di Legnaro, Viale dell'Università 2 , 35020 Legnaro (Pd), Italy — [4]INFN - Laboratori Nazionali del Sud, Via S. Sofia 62, 95125 Catania, Italy

Local 3D nanostructuring of superconducting YBCO films can change superconducting properties so deeply that the functional responce to external excitations of virgin and nanostructured regions can be decoupled inside given (B, T) phase areas.

THUp.SUP.25 16:30

Interplay of (un)conventional superconductivity and Stoner- or kinetic- type ferromagnetism within homogeneous systems and hetero-structures — •Mario Cuoco[1,2], Zu-Jian Ying[1,2,4], Canio Noce[1,2], Huan-Qiang Zhou[4], Alfonso Romano[1,2], and Paola Gentile[1,3] — [1]Laboratorio Regionale SuperMat, CNR-INFM, Baronissi (SA), Italy — [2]Dipartimento di Fisica "E. R. Caianiello", Università di Salerno — [3]International School for Advanced Studies (SISSA) and INFM Democritos National Simulation Center, via Beirut 2-4, 34014 Trieste, Italy — [4]Centre for Modern Physics, Chongqing University, Chongqing 400044, People's Republic of China

We consider the competition of (un)conventional superconductivity (S) and itinerant ferromagnetism (F) in homogeneous systems with singlet type pairing and S/F bilayer with triplet p- or singlet d-wave pairing.

THUp.SUP.26 16:30

YBCO nanostructures — •Gianpaolo Papari[1], Detlef Born[2], Franco Carillo[2], Leonardo Bartoloni[2], Daniela Stornaiuolo[3], Fabio Beltram[2], and Francesco Tafuri[3] — [1]INFM-CNR Coherentia and Dip. Scienze Fisiche, Università di Napoli Federico II, I-80126 Napoli, Italy — [2]NEST INFM-CNR and Scuola Normale Superiore, I-56126 Pisa, Italy — [3]Seconda Università di Napoli, I-81031 Aversa(Ce), Italy

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Physics Department

16:30 – 18:40

Physics of Socio-Economic and Complex Systems - Poster Session

THUp.SOC.1 16:30

Critical network size of terrorist conspiracies — •Gordon Woo — Risk Management Solutions, London, UK

Graph-theoretic network percolation theory has been applied to the social networks of terrorists. It is shown that there is a tipping point in the number of conspirators, beyond which interdiction becomes increasingly likely.

THUp.SOC.2 16:30

Institutional structures as Benard-Taylor processeses — •Ionut Purica — IPE Romanian Academy, Bucharest, Romania

A model was developed in which the reaction-diffusion of mimes (Dawkins) in a human niche (Popper) is described as a Brusselator presenting far from equilibrium stabilities of Benard-Taylor type associated to evolution of institutional structures.

THUp.SOC.3 16:30

Multi-stability: Social Systems and Statistical Physics — •Katarzyna Ostasiewicz, Andrzej Radosz, and Piotr Magnuszewski — Institute of Physics, Wroclaw University of Technology, Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland

Within utility function approach to binary choice, logistic distribution of random term leads to the mean-field statistical physics' result of the Ising model. The status of this distribution in the utility function method is discussed.

THUp.SOC.4 16:30

A data mining approach to health organization problems — •Giancarlo Cappellini[1,3], Luigi Minerba[2,3], Alessandro Chessa[1,3], Gianni Mula[1,3], and Nicola Perra[1,3] — [1]CNR-SLACS, Dipartimento di Fisica - Universita' di Cagliari, Monserrato (Ca), Italy — [2]Public Health Department - Policlinico Universitario, Cagliari, Italy — [3]Linkalab - Center for the Study of Complex Networks, Cagliari, Italy

A data mining analysis, based on the theory of complex networks, of one-year standard discharge data of a medium-size health organization has been performed and discussed in detail.

THUp.SOC.5 16:30

Path-integral option pricing in a stochastic interest rate Heston model — •Damiaan Lemmens[1], Michiel Wouters[1], Jacques Tempere[1], and Sven Foulon[2] — [1]TFVS, University of Antwerpen, Belgium — [2]KBC Bank, Belgium

A path-integral calculation scheme is presented (and checked with Monte-Carlo) to obtain option prices in a setting where both the interest rate and volatility are stochastic. It is uniquely suited for pricing path-dependent exotics.

THUp.SOC.6 16:30

Robustness and Spreading Processes in Local-World Networks with Node Competition — •Tatiana Progulova, Bahruz Gadjiev, and Daria Schetinina — International University for Nature, Society and Man, Dubna, Russia

Local-world networks with nodes competition is introduced. In such networks a transformation occurs with the change of the local-world size from assortative to disassortative. We have studies spreading processes in these networks.

THUp.SOC.7 16:30

Evolving networks by merging nodes — •Farinaz Roshani — Department of Physics, Alzahra University, Tehran, 19938-91167, Iran.

We study merging mechanism for the creation of complex networks in several models.

THUp.SOC.8 16:30

Aplication of Exponential Model for Option in the Ibovespa Index — •Antônio Ramos and Giovani Vasconcelos — Pernambuco Federal University, UFPE, Av. Professor Luiz Freire, s/n Recife-PE, Brazil

We make a comparative study between the market prices for Ibovespa call options and the corresponding predictions of the standard Black-Scholes model and an empirical model that assumes an exponential distribution for returns.

THUp.SOC.9 16:30

Statistical Physics Methods in Elections — •Chung-I Chou[1], Sai-Ping Li[2], Jie-Jun Tseng[2], and Sun-Chong Wang[3] — [1]Department of Physics, Chinese Culture University, Taipei 111 Taiwan. — [2]Institute of Physics, Academia Sinica, Taipei 115 Taiwan. — [3]Institute of Systems Biology and Bioinformatics National Central University, Chungli 320 Taiwan.

The contribution has been withdrawn by the authors.

THUp.SOC.10 16:30

Dynamical Financial Networks in Financial Markets — •Kyungsik Kim[1], Soo Yong Kim[2], and Enrico Scalas[3] — [1]Department of Physics Pukyong National University, Busan 608-737, Korea — [2]Department of Physics, KAIST, Daejeon 305-701, Korea — [3]Department of AST, East Piedmont University, Alessandria 15100, Italy

We investigate four financial networks in the KSE, TSE, CSM, and NYSE, using numerical simulations and scaling arguments. We present the cross-correlation, degree distribution, and edge density estimated numerically from the market graph.

THUp.SOC.11 16:30

Lost Work, Extra Work and Entropy production for a system with complexity: the nano-stepwise Carnot cycle — •Francesco di Liberto — Dipartimento di Scienze Fisiche Università di Napoli *Federico II* INFN- Sezione di Napoli, Cnism-CNR-INFM, Unità di Napoli Italy diliberto@na.infn.it fax + 39 081 676346

Lost Work, and Extra Work are analyzed and evaluated for a process with complexity: the nano-stepwise Carnot cycle, a cycle performed by means of N very small weights added and the removed from the piston.

THUp.SOC.12 16:30

Stochastic model for an ecosystem of cancerous cells in Chronic Myeloid Leukemia — Nicola Pizzolato, •Davide Valenti, Dominique Persano Adorno, and Bernardo Spagnolo — Dipartimento di Fisica e Tecnologie Relative, Università di Palermo, Viale delle Scienze, Ed. 18 - 90128 Palermo, ITALY

The dynamics of cancer progression is modelled by considering the stochastic evolution of cell populations which can experience genetic mutations. Several scenarios in the evolutionary dynamics of leukaemic cells are described for different modelled therapies.

THUp.SOC.13 16:30

Three-body Interactions in Coalition Forming — •Marcelo del Castillo-Mussot, Fernando Samaniego-Steta, and Gerardo Garcia Naumis — Institute of Physics, National Autonomous University of México (UNAM), Apartado Postal 20-364, 01000 México D. F., México

We present a study of the effects of three-body interactions in the process of coalition formation, and we apply the model to a simplified scenario of the Iraq war.

THUp.SOC.14 16:30

Ecological Monitoring of the Coastal Waters of the River Danube in the District of Rousse * Bulgaria — •Boryana Todorova[1] and Todorka Stefanova[2] — [1]Rousse Universitet, Rousse, 7017, 8 Studentska str. Bulgaria — [2]Rousse Universitet, Rousse, 7017, 8 Studentska str. Bulgaria

Places for analysis of coastal water of the river and controlled indexes of the analysis, we have carried out, are selected by using an worked out system of criteria. The results and conclusions are presented.

THUp.SOC.15 16:30

Transition Between Non-Gaussian and Gaussian Stock Market Behaviour After Informational Shocks: Complex Network Analysis — •Jesús Carrete[1], Juan Carlos Reboredo[2], and Luis Miguel Varela[1] — [1]Departamento de Física da Materia Condensada, Universidade de Santiago de Compostela, Spain — [2]Departamento de Fundamentos da Análise Económica, Universidade de Santiago de Compostela, Spain

The propagation of new information across a continuous order-driven stock market, modelled as an Albert-Barabasi network, is computationally simulated in order to analyze the transition between Gaussian and non-Gaussian behaviours.

16:30 – 18:40

Surface, Interface and Low-Dimensional Physics II - Poster Session

THUp.SUR.1 16:30

Regularities of submicron spherical powders and nanosized structures formation from electroconductive materials by electroerosion dispersion — Mykola Monastyrov[1,2], •Tetiana Prikhna[2], Petro Talanchuk[1], and Roman Shekera[1,2] — [1]. Open International University of Human Development Ukraine, 1g Chorevaya Street, , Kiev, 04071, Ukraine, prikhna@mail.ru — [2]Institute for Superhard Materials of the National Academy of Sciences of Ukraine, 2 Avtozavodskaya Street, Kiev, 04074, Ukraine, prikhna@iptelecom.net.ua

The regularities of submicron spherical powders and nanosized structures (Fe, Cu, Al, Sn, Ti, Ta, Co, Ni, CuO, aluminum oxide, tungsten carbides, carbides and nitrides) formation from electroconductive materials by electroerosion dispersion are discussed.

THUp.SUR.2 16:30

Effect of external stress on phononic and surface properties of auxetic crystal — •Dominik Trzupek[1,2], Dariusz Twaróg[1], and Piotr Zieliński[1,3] — [1]The H. Niewodniczański Institute of Nuclear Physics PAN, ul. Radzikowskiego 152, 31-342 Kraków, Poland — [2]Jagiellonian University, Institute of Physics, ul.Reymonta 4, 30-059 Kraków, Poland — [3]Cracow Technical University, Institute of Physics, ul. Podchorazych 1, 30-084 Kraków, Poland

Elastic constants are evaluated as functions of external stresses in model of auxetic. Absolute stop bands for bulk lattice waves and dispersion relations for surface waves are shown to be tunable by stress.

THUp.SUR.3 16:30

Irreducible finite-size effects in surface free energies from crystal-nucleation data. — •Tatyana Zykova-Timan[1], Chantal Valeriani[2], Eduardo Sanz[3], Daan Frenkel[2], and Erio Tosatti[4,5] — [1]Dept. of Chemistry and Applied Biosciences, ETHZ, 6900 Lugano, Switzerland — [2]F.O.M. Institute for Atomic and Molecular Physics, Kruislaan 407, 1098 SJ Amsterdam, The Netherlands — [3]Dept. of Physics, Utrecht University, Princetonplein 5, 3584CC Utrecht, The Netherlands — [4]The Abdus Salam I.C.T.P, 34014 Trieste, Italy — [5]SISSA and INFM/Democritos, Via Beirut 2-4, 34014 Trieste, Italy

Our work highlight the fact that if nucleation studies are used to estimate solid-liquid surface free energies, the analysis cannot be based on classical nucleation theory but must make use of the microscopic theories.

THUp.SUR.4 16:30

Growth, Stability and Structure of Zn/Pd(111) — •Werner Stadlmayr and Norbert Memmel — Institute of Physical Chemistry, University of Innsbruck, A-6020 Innsbruck, Austria

Low-energy ion-scattering is applied to study Zn films on Pd(111), for which conflicting results were reported. At temperatures of 300-550 K our data indicate a slightly buckled 1:1 surface alloy, supporting a recent XPS study.

THUp.SUR.5 16:30

Spin Hall effect, spin currents and spintronics in ballistic low dimensional nanodevices — •Pasquale Onorato[1,2] and Stefano Bellucci[1] — [1]INFN, Laboratori Nazionali di Frascati, P.O. Box 13, 00044 Frascati, Italy — [2]Dip. Ingegneria dell'Informazione, Seconda Universit\'a di Napoli, 81031 Aversa (CE), Italy.

We consider the Spin Effects due to the Spin Orbit interactions in ballistic devices patterned in two dimensional electron gases. We discuss the Spin Hall Effect and the role of these devices in the spintronics.

THUp.SUR.6 16:30

The adsorption of Pb on Si (100)-2x1 surface: Intermixing at interface. — •Pavel Shukrynau, Martin Svec, Martin Vondracek, Pingo Mutombo, and Vladimir Chab — Institute of Physics Academy of Sciences of the Czech Republic. Cukrovarnicka 10, CZ 162 53, Prague, Czech Republic.

We studied Pb adsorption on the Si (001)-2x1 surface deposited at RT using VT STM/STS. New chains with contrast different from Pb chains are found on the surface. They are parallel to the Pb rows.

THUp.SUR.7 16:30

Ordered surface-alloys formation in the Hf/W(100) adsorption system — •Antoni Ciszewski, Artur Trembulowicz, Leszek Jurczyszyn, and Zbigniew Szczudlo — Institute of Experimental Physics, University of Wroclaw, pl. Maksa Borna 9, 50-204 Wroclaw, Poland

Surface alloying in Hf/W(100) system was studied using STM, LEED and AES. Two ordered c(2x4) and (r5xr5)R26.6 phases were observed. Ab-initio molecular dynamics calculations proved that they respectively correspond to Hf3W and Hf4W surface alloys.

THUp.SUR.8 16:30

Conductance of a tunnel point-contact of noble metals in the presence of a single defect — •Yevgeniya Avotina[1], Yuriy Kolesnichenko[1], Sander Roobol[2], and Jan van Ruitenbeek[2] — [1]B.I. Verkin Institute for Low Temperature Physics and Engineering, National Academy of Ukraine, Kharkov, Ukraine — [2]Kamerlingh Onnes Laboratorium, Universiteit Leiden, Leiden, The Netherlands

We have demonstrated the possibility of calculations of anisotropic conductance oscillation caused by electron scattering by the defect. The analysis of interference patterns makes it possible to find the position of the defect below surface.

THUp.SUR.9 16:30

Field emission studies on carbon nanotubes in alumina templates — •Fabrizio Odorici[5], Renato Angelucci[1,5], Ilario Boscolo[2], Simone Cialdi[2], Alessandro Ciorba[3], Marco Cuffiani[4,5], Luciana Malferrari[5], Alessandro Montanari[5], Rita Rizzoli[1,5], Marco Rossi[3], Vito Sessa[6], Maria Letizia Terranova[6], and Giulio Paolo Veronese[1,5] — [1]CNR IMM sezione di Bologna, V. Gobetti 105, 40126 Bologna, Italy — [2]INFN and Dipartimento di Fisica Università di Milano, via Celoria 16, 20133 Milano, Italy — [3]Dipartimento di Energetica, Università di Roma La Sapienza, via A. Scarpa 16, 00161 Roma, Italy — [4]Dipartimento di Fisica Università di Bologna, V.le B. Pichat 6/2, 40127 Bologna, Italy — [5]INFN, V.le B. Pichat 6/2, 40127 Bologna, Italy — [6]Dipartimento di Scienze e Tecnologie Chimiche, MINASlab, Università di Roma Tor Vergata and INFN, via della Ricerca Scientifica, 00133 Roma, Italy

Carbon nanotubes electronic and geometrical properties make them almost ideal nanomaterial for building field-emission based electron sources. Open questions about field emission are discussed by comparing simulations with measurements on carbon nanotubes in alumina templates.

THUp.SUR.10 16:30

Nonequilibrium Potential Approach: New Aspects — •Horacio S. Wio — Instituto de Fisica de Cantabria, Santander, SPAIN

SR in spatially extended systems, including nonlocal contributions with an "optimal" value giving a SR*s maximum response, are obtained; a NEP for KPZ, conjectures proved, and SR in a "bounded KPZ" discussed.

THUp.SUR.11 16:30

Potential energy surface of sliding interfaces: insight into the tribological properties of nanoscale materials, two cases studied. — Giovanna Zilibotti[1,2,3], Maria Clelia Righi[1,2,3], Mauro Ferrario[1,2,3], and •Carlo Maria Bertoni[1,2,3] — [1]INFM-CNR national research center on nanoStructures and bioSistems at Surfaces (S3) — [2]CNISM Consorzio Interuniversitario per le Scienze Fisiche della Materia — [3]Dipartimento di Fisica, Universita di Modena e Reggio Emilia, Via Cami 213/a, Modena, Italy

The frictional properties of surfaces in relative motion are governed by the potential energy surface. Two cases studied: i) rare gas monolayers on metal substrates, ii) diamond surfaces in presence (or in absence) of adsorbates.

THUp.SUR.12 16:30

Boundary between bcc and hcp Lattices in a 4 He Quantum Crystal (Local oscillations and dissipation) — •Victor Lykah[1] and Eugene Syrkin[2] — [1]National Technic University "Kharkiv Polytechnic Institute", 21 Frunze Str., Kharkiv, 61002, Ukraine — [2]Institute for Low Temperature Physics and Engineering of NAS, 47 Lenin Ave., Kharkiv, 61103, Ukraine

Microscopic transition between bcc and hcp phases is considered. The form and energy of the boundary are found. Spectrum of local oscillations on the boundary is found. The mechanism meets recent experiments in solid He.

THUp.SUR.13 16:30

Light-induced growth and demolition of alkali metal nanoparticles in porous silica — •Alessia Burchianti — CNISM and Physics Department, University of Siena, I-53100 Siena, Italy

Light-induced structural changes of alkali-metal nanoparticles grown in porous silica are analysed. Light, depending on its frequency, induces either growth or demolition of alkali metal clusters with size and shape determined by the host-guest interaction.

THUp.SUR.14 16:30

Physical properties of nanostructured Si layers induced by high energy ions implantation — •Antonio Serra[1], Daniela Manno[1], Emanuela Filippo[1], Lucio Calcagnile[2], Gianluca Quarta[2], Lucio Maruccio[2], and Marco Rossi[3] — [1]Dipartimento di Scienza dei Materiali - Universita* del Salento I-73100 Lecce (Italy) — [2]Dipartimento di Ingegneria dell*Innovazione - Universita* del Salento CEDAD, I-73100 Lecce (Italy) — [3]Dipartimento di Energetica * Universita* di Roma *La Sapienza* I-00161 Roma (Italy)

In this work a tandem-type accelerator at 3 MV acceleration voltage, has been used to implant oxygen ions on Si(001). The detailed understanding of the physical properties has requested the application of complimentary techniques.

THUp.SUR.15 16:30

Van der Waals interactions by Wannier functions and the adsorption of Ar on graphite. — karima benyahia and •Pier Luigi Silvestrelli — Dipartimento di Fisica *Galilei*, *Universita di Padova, via Marzolo 8, I-35131 Padova, Italy.

We apply the novel Maximally localized Wannier functions (Van der Waals interactions) to adsorption of Ar on graphite

THUp.SUR.16 16:30

Charge and Discharge Process on SiO2 by SPM Techniques: Towards Data Storage Devices — •Elisângela Silva-Pinto and Bernardo Ruegger Almeida Neves — Departamento de Física, Universidade Federal de Minas Gerais, Av. Antônio Carlos, 6627, Cep. 30123-970 - Belo Horizonte, Minas Gerais, Brasil

Careful study of charging and discharging processes on SiO2 is realized by SPM techniques. The influence of air relative humidity and surface hydrophobicity is analyzed and a complete route to develop memory devices is presented.

THUp.SUR.17 16:30

Electrical Conduction Mechanism in Titanium Oxide Thin Films — •Diana Mardare and Gheorghe I. Rusu — Alexandru Ioan Cuza Univeristy, Faculty of Physics, Iasi,Romania

In this study, a model have been proposed (Baccarani) to explain the mechanism of electrical conduction in TiO2 sputtered thin films. Impurity concentration and the constant interface-state distribution have been calculated using Baccarani model.

THUp.SUR.18 16:30

Excitons in Wurtzite AlGaN/GaN Quantum-Well Heterostructures: Role of Non-Adiabaticity — Evghenii Pokatilov[1], Denis Nika[1], •Vladimir Fomin[1,2,3], and Jozef Devreese[2,3] — [1]PMS, State University of Moldova, Chisinau, Moldova — [2]TFVS, Universiteit Antwerpen, Belgium — [3]PSN, COBRA, TU Eindhoven, The Netherlands

Using six-band hole Hamiltonians, we analysed excitons in wurtzite AlGaN/GaN quantum-well heterostructures. A non-adiabatic approach is needed in order to quantitatively interpret the observed positions and ratios of the intensities of the photoluminescence peaks.

THUp.SUR.19 16:30

High-field electronic transport in thin-film systems of the metal/organic polymer/metal type — •Gheorghe Rusu[1], An-

ton Airinei[2], George Rusu[1], Mihaela Diciu[1], Petronela Rambu[1], and Mihaela Rusu[1] — [1]"Al.I.Cuza" University, Faculty of Physics, 11 Carol I Blvd, R-700506, Iasi, Romania — [2]P.Poni Institute of Macromolecular Chemistry, Grigore Ghica Voda, 41A, R-700487, Iasi, Romania

For some new chelate modified polysulfones, the thin-film heterostructures of the metal/polymers/metal type are studied.

Some interesting non-ohmic effects have been obtained for high electric fields (>10^5 V/cm.

THUp.SUR.20 16:30

Electronic properties of Si(111)/alkyl monolayer interfaces — •Damien Aureau — Laboratoire de Physique de la Matière Condensée, Ecole Polytechnique, Route de Saclay 91120 Palaiseau, France — Hahn-Meitner-Institut Abteilung Silizium-Photovoltaik, (SE1) Kekuléstrasse 5D-12489 Berlin

Si-alkyl surfaces were investigated using infrared spectroscopy, in-situ photoluminescence and photovoltage measurements. They exhibit the same electronic quality as Si-H surfaces with a higher stability, even in contact with buffer solutions up to pH 9.

THUp.SUR.21 16:30

Size and shape tuning of silver nanostructures by a rapid microwave assisted green method — Emanuela Filippo, Daniela Manno, and •Antonio Serra — Dipartimento di scienza dei Materiali - Università del Salento-73100 Lecce (Italy)

Silver nanostructures have been prepared by a rapid green approach under microwave irradiation from a solution of silver nitrate and sucrose. Silver colloids with different morphologies were successfully obtained at different microwave irradiation time.

THUp.SUR.22 16:30

Shifts and splitting of surface plasmon in copper nanoparticles under femtosecond laser irradiation — •Igor Dmitruk[1,2], Ivan Blonskyy[1], Ihor Pavlov[1], Oleg Yeshchenko[2], Alexandr Alexeenko[3], Andrij Dmytruk[1,4], Petro Korenyuk[1], and Viktor Kadan[1] — [1]Femtosecond Laser Complex, Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine — [2]Physics Faculty, Kyiv National Taras Shevchenko University, Kyiv, Ukraine — [3]GomelState Technical University, Gomel, Belarus — [4]Center for Interdisciplinary Research, Tohoku University, Sendai, Japan

Red shift and splitting of surface plasmon in copper nanoparticles observed under irradiation by femtosecond laser pulse are interpreted as a result of change of dielectric constant of silica matrix due to optical Kerr effect.

THUp.SUR.23 16:30

Ab initio transport properties of Silicon/organic/Silicon interfaces — •Andrea Ferretti[1,2], Benedetta Bonferroni[1,2], Arrigo Calzolari[2], Alice Ruini[1,2], Marilia J. Caldas[3], and Elisa Molinari[1,2] — [1]Dipartimento di Fisica, Università di Modena e Reggio E., via Campi 213/A, IT-41100 Modena, Italy — [2]INFM-CNR-S3, Natl. Center on nanoStructures and bioSystems at Surfaces, via Campi 213/A, IT-41100 Modena, Italy — [3]Instituto de Física, Universidade de São Paulo, Cidade Universitária, SP-05508-900 São Paulo, Brazil

We investigate from first-principles the electronic and transport properties of hybrid organic-silicon interfaces made with conjugated molecules. The effects on transport of molecule–substrate bonding are explicitly analysed. Oxygen-bonded interfaces are identified as promising systems.

THUp.SUR.24 16:30

Antiferromagnetic Ordering in Adsorbed C60 on the Si(100) Surface: Density-Functional Theory Calculations — •Ji Young Lee[1,2], Myung Ho Kang[1], and Jun-Hyung Cho[2] — [1]Department of Physics, Pohang University of Science and Technology, Pohang 790-784, Korea — [2]BK21 Program Division of Advanced Research and Education in Physics, Hanyang University, 17 Haengdang-Dong, Seongdong-Ku, Seoul 133-791, Korea

We study the atomic and magnetic properties of the C60/Si(100)-c(4x4) surface using spin-polarized density-functional calculations. We predict the presence of antiferromagnetic coupling between unpaired dangling bonds within the conventional structural model.

THUp.SUR.25 16:30

Calculation of Contact Supercooling for InAs-Substrate Contacting with Sb-Solution in Ga-Melt — •Yevgen Baganov and Stanislav Shutov — Kherson National Technical University, Kherson, Ukraine

At present work the contact supercooling for the system InAs substrate - solution Sb in the Ga melt, in the range of the contact temperatures 400-650 °C and (100) and (111) substrate orientation is calculated.

THUp.SUR.26 16:30

Influence of annealing on the surface morphology and optical transmission of antimony trioxide thin films — •Nicolae Tigau — Department of Physics, Dunarea de Jos University of Galati, 111 Domneasca, 800201 Galati, Romania

The paper presents the influence of annealing on the surface morphology and optical transmission of antimony trioxide film deposited onto glass substrates. A correlation was established between the optical transmission and surface roughness of film.

THUp.SUR.27 16:30

Self-organization of charge-transfer C60-Zn(II) tetraphenylporphyrin complexes on condensation from quasiequilibrium vapour phase — •Irina Zakharova[1], Ekaterina Donenko[1], Galina Ermolaeva[2], Valerii Shilov[2], Tatiana Makarova[3], Oleg Kvyatkovskii[4], and Ludvig Belyakov[4] — [1]State Polytechnic University, St. Petersburg, 195251, Russia — [2]RC "Vavilov State Optical Institute" St. Petersburg, 199034, Russia — [3]Ioffe PTI RAS, St. Petersburg, 194021, Russia — [4]Umeå University, 90187 Umeå, Sweden

The method of vacuum evaporation in a hot-wall quasi-closed volume allows the growth of epitaxial layers close to thermodynamic equilibrium conditions, which triggers the self-organization process under the formation of C60-Zn(II)tetraphenylporphyrin (ZnTPP) complexes.

THUp.SUR.28 16:30

On the Electronic Transport Mechanism in Polycrystalline CdO Thin Films — •Gheorghe Rusu, Radu Rusu, Petronela Rambu, Cristian Dantus, and George Rusu — "Al.I.Cuza" University, Departament of Physics, 11 Carol I Blvd, 700506, Iasi, Romania

CdO tin films, deposited by vacuum evaporation, are polycrystalline and have a cubic structure. The mechanism of electrical conduction is explained in term of Seto's model for polycrystalline semiconducting films.

THUp.SUR.29 16:30

Cross-sectional STM of the GaN (-2110) plane — David Krüger, Thomas Schmidt, Jan Ingo Flege, Timo Aschenbrenner, Stephan Figge, Detlef Hommel, and •Jens Falta — University of Bremen, Bremen, Germany

The (-2110) plane of a cleaved single GaN crystal has been investigated using cross-sectional scanning tunneling microscopy. The finding of a 1x1 unit cell points towards a stable bulk termination at room temperature.

THUp.SUR.30 16:30

Localization and Magnetic Properties of the Ground State of the Mn^{2+} Centers in ZnS Nanoparticles — Sergiu V. Nistor[1], •Mariana Stefan[1], Leona C. Nistor[1], Carmencita D. Mateescu[1], Ruxandra Birjega[2], and Etienne Goovaerts[3] — [1]National Institute of Materials Physics, Bucharest-Magurele, Romania — [2]National Institute of Laser, Plasma and Radiation Physics, Bucharest-Magurele, Romania — [3]University of Antwerp -CDE, Wilrijk, Belgium

The localization and spin Hamiltonian parameters of three Mn^{2+} centers in nanostructured ZnS with mesoporous structure were for the first time unambiguously determined from the quantitative analysis of multifrequency Electron Paramagnetic Resonance spectra.

THUp.SUR.31 16:30

Surface Analysis of III-Nitride-Based Lateral Polarity Heterostructures — Pierre Lorenz[1], Sindy Hauguth Frank[1], Juergen A. Schaefer[1], Vadim Lebedev[2], Oliver Ambacher[2], and •Stefan Kirschok[1] — [1]Insitut für Physik and Institut für Mikro- und Nanotechnologien, Technische Universität Ilmenau P.O. Box 100565 D-98684 Ilmenau, Germany — [2]Fraunhofer Institute for Applied Solid State Physics, Tullastr. 72, 79108 Freiburg, Germany

We investigated ex-situ and in-situ grown N-face and Ga-face GaN and GaN-based LPHs (periodicity 2-5 μm) grown on sapphire subtrates by molecular beam epitaxy (MBE). The GaN samples were studied by surface sensitive techniques.

THUp.SUR.32 16:30

Comparative Study on the Structural and Electrical Properties of Undoped and Zn-doped CdO Thin Films — •Petronela Rambu, Cristian Dantus, and George Rusu —

Thursday

Al.I. Cuza University, Faculty of Physics, Carol I Blvd., No. 11, 700506-Iasi, Romania

Non-doped and Zn-doped CdO thin films have been obtained by thermal oxidation of vacuum evaporated metallic Cd and (Cd, Zn) thin films. The structural characteristics and electrical conductivity of as obtained samples were investigated.

THUp.SUR.33 16:30

Optical properties of periodic ensembles of metal nanowires for sensing — •Mariya Sosnova, Nicholas Dmitruk, Alexandr Korovin, and Olga Mayeva — Institute of Semiconductor Physics, National Academy Science of Ukraine, 41 prospect Nauki Kyiv, Ukraine

Both the influence of ensemble characteristic on excitation of the local plasmon in nanowire and surface electromagnetic waves in 1D periodic system of metal nanowires and peculiarity of the interaction between such modes were considered

THUp.SUR.34 16:30

Magnetoresistance and Fabry-Perot interference in graphene spin valve devices — •Masashi Ono[1], Satoru Masubuchi[1], Kohei Hamaya[1,2], Minoru Kawamura[1], and Tomoki Machida[1,2] — [1]Institute of Industrial Science, University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan — [2]Institute for Nano Quantum Information Electronics, University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan

We study oscillatory changes in magnetoresistance effect and Fabry-Perot interference in a graphene single layer attached to ferromagnetic electrodes for various gate-bias voltages. The relation between these two phenomena will be discussed.

THUp.SUR.35 16:30

Optical properties of inorganic/organic semiconductor hetero-structures: quaterthiophene intercalated in cadmium chalcogenophosphate — •Silvia Tavazzi[1], Peter Jonathan Samuel Foot[2], Massimiliano Labate[1], Luciano Miozzo[1], Hugh O.Malley[2], Antonio Papagni[1], Leonardo Silvestri[1], and Peter Spearman[1,2] — [1]Università degli Studi di Milano Bicocca, Via Cozzi 53, I-20125 Milano (Italy) — [2]School of Chemical and Pharmaceutical Sciences, Kingston University, Kingston upon Thames KTI 2EE (United Kingdom)

We report and compare the UV-vis optical functions and emission properties of cadmium chalcogenophosphate (CdPS3) crystals and hetero-structures of CdPS3 intercalated with quaterthiophene molecules, thus showing the synergistic effect of the organic and inorganic components

THUp.SUR.36 16:30

Ab initio simulation of C clustering on Ni (111) surface: the bonding between Ni and C. — •Galina Kalibaeva[1], Rodolphe Vuilleumier[2], Ali Alavi[3], Simone Meloni[4], and Giovanni Ciccotti[1] — [1]Universita di Roma "La Sapienza", Roma, Italy — [2]Universite Pierre et Marie Curie, Paris, France — [3]University of Cambridge, Cambridge, UK — [4]CASPUR, Roma, Italy

We analyse the electronic structure and state occupations of adsorbed carbon on Ni(111) surface at different coverages using carbon effective molecular orbitals obtained from rediagonalization of maximally localized Wannier orbitals assigned to carbon atoms.

THUp.SUR.37 16:30

Gas sensitivity mechanism of MIS-structures based on nanoporous silicon/catalytic Me composites — •Dmitro Danilyuk[1], Tetyana Gorbanyuk[2], and Volodymir Litovchenko[2] — [1]Kiev Taras Shevchenko national university, Radiophysical faculty, prospect Glushkova 5, 03127, Kiev, Ukraine — [2]V. Lashkaryov Institute of Semiconductor Physics of NAS Ukraine, prospect Nauki, 41, 03028 Kiev, Ukraine

During our investigation, it was found that the MIS-structures based on nanoporous silicon films with embedded different transition Me microparticles possess enhanced sensitivity to some gas molecules. Mechanism of these phenomena has been studied.

THUp.SUR.38 16:30

Peculiarities of light propagation through thin corrugated metal films in surface plasmon polariton regime — •Alexander Korovin and Mariya Sosnova — V.E. Lashkarev Institute of Semiconductor Physics, NAS of Ukraine, 41 prospect Nauki, Kiev, 03028, Ukraine

The essential spectral line shape transformation of split SPPs at p-polarized light propagation through thin corrugated films surrounding by closed dielectric media with presence of the shift between both film profiles has been obtained theoretically

THUp.SUR.39 16:30

Surface charge modes on GaAs nanowires probed by Raman spectroscopy — •E. Speiser[1], W. Richter[1], P. Prete[2], P. Paiano[3], and N. Lovergine[3] — [1]Dipartimento di Fisica, CNISM, Università di Roma Tor Vergata, 00133 Roma, Italy — [2]IMM-CNR, Unità di Lecce, Via Arnesano, 73100 Lecce, Italy — [3]CNISM, and Dipartimento di Ingegneria dell'Innovazione, Università del Salento

We have performed Raman measurements on single GaAs nanowires which show several surface modes. This assignment is made via the polarization rules, frequency analysis and calculations from the dielectric continuum model.

THUp.SUR.40 16:30

Local screening of a carbon nanotube by a STM tip — •Marine Guigou, Adeline Crepieux, and Thierry Martin — Centre de Physique Théorique, Marseille, France

We address the question of local screening of a carbon nanotube by a STM tip. Considering their effects, we analyse to what extent they affect the transport in the nanotube.

THUp.SUR.41 16:30

The anisotropic growth of a vicinal surface under the meandering instability — •Alberto Verga — Aix-Marseille Université, Im2nP, Marseille, France

The step flow dynamics of a vicinal surface is intrinsically anisotropic. We derive an evolution equation and investigate the scaling properties of the surface roughness and demonstrate that length scales and height amplitude satisfy scaling laws.

THUp.SUR.42 16:30

Charge spectroscopy of quantum confinement levels and transport in SiGe quantum well — •Miron Kagan[1], Irina Antonova[2], Svetlana Smagulova[3], Efim Neustroev[3], Pavel Alekssev[4], and James Kolodzey[5] — [1]Institute of Radio Engineering and Electronics, Russian Ac. Sci., Moscow, Mokhovaya 11, Russia — [2]Institute of Semiconductor Physics, Russian Ac. Sci., Novosibirsk, Lavrentieva 13, Russia — [3]Yakutsk State University, Yakutsk, Saha Republik, Belinskogo 32, Russia — [4]A.F. Ioffe Phisiko-Technical Institute, Russian Ac. Sci., St. Petersburg — [5]University of Delaware, Newark, DE 19716, USA

Recharging of quantum confinement levels in single-quantum-well Si/SiGe/Si structures was studied by charge spectroscopy. A peak demonstrated several activation energies in different temperature intervals was found. The activation energies origin is discussed.

THUp.SUR.43 16:30

Electron energy loss spectra of clean and oxidized Si surfaces — •Lucia Caramella[1,2], Conor Hogan[1,3], and Giovanni Onida[1,2] — [1]European Theoretical Spectroscopy Facility (E.T.S.F.) — [2]Physics Department of Università degli Studi di Milano, via Celoria, 16, I-20133 Milano, Italy — [3]Physics Department and CNR-INFM, Università di Roma Tor Vergata, via della Ricerca Scientifica, I-00133 Roma, Italy

We present recent progresses in the calculations of the EEL spectra of surfaces within the framework of the three layer model. The main system we investigate is the Si(100) surface, both clean and oxidized.

THUp.SUR.44 16:30

Electroni state dispersion and electron-phonon interaction of — •Pierluigi Gargiani[1], Mario Italo Trioni[2], Simona Achilli[2], Fabio Bussolotti[1], and Maria Grazia Betti[1] — [1]Dipartimento di Fisica Università Roma La Sapienza Piazzale Aldo Moro 2 I-00185 Roma, Italy — [2]CNISM Università Milano Bicocca CNISM UdR Milano Bicocca, I-20125 Milan, Italy

A combined experimental and theoretical study of the electronic properties of the Bi 2D structural phases investigated by angle resolved photoemission experiments and ab initio calculation is presented. The electron-phonon interaction will be discussed.

THUp.SUR.45 16:30

Atomic Oxygen Concentration in Plasma for Film Growth Activation in — •Theodore Christidis, Diala Haidar-Ahmad, Maya Abi Akl, and Malek Tabbal — Physics Department, American University of Beirut, Beirut, Lebanon

Actinometry has been performed in oxygen-helium plasma as a function of plasma power, gas pressure and helium-to-oxygen ratio. Oxygen dis-

sociation increases with plasma power and helium fraction but decreases with gas pressure.

THUp.SUR.46 16:30

Three-terminal negative resistance induced by electron-electron scattering: Bernoulli effect in an electron gas — •Ismet Kaya — Sabanci University, Faculty of Engineering and Natural Sciences, 34956 Istanbul, Turkey

The experimental results for three terminal devices fabricated in a 2DEG with submicron transit lengths is presented. The negative resistance effect is strongly enhanced with the reduced dimensions consistent with the the directional scattering picture.

THUp.SUR.47 16:30

Noble metal nanoparticles fabrication and fragmentation by femtosecond laser ablation: size comparison by extinction spectroscopy and electron microscopy — •Gustavo Torchia[1,2], Daniel Schinca[1,3], Lucia Scaffardi[1,3], Pablo Moreno[2], and Luis Roso[2] — [1]Centro de Investigaciones Opticas, CIC-Conicet, cc 124 La Plata (1900), La Plata, Argentina — [2]Grupo de Optica, Universidad de Salamanca, Plaza de la Merced s/n, Salamanca, Spain — [3]Area Departamental de Ciencias Basicas, Facultad de Ingenieria, Univesridad Nacional de La Plata, la Plata, Argentina

Gold and silver nanoparticles were fabricated from femtosecond laser ablation immersed in liquid media. We compare the extinction spectroscopy against TEM and discuss different mechanisms involved in the decrease of particle size due to fragmentation.

THUp.SUR.48 16:30

Atmospheric ionization in urban centres and suburbs areas — •Florian Mandija — University of Shkodra, Department of Physics, Shkoder, Albania

This study concerns on the small air ion concentration. This is correlated with the meteorological parameters, the concentration of aerosols, the radiation level, the presence of electric fields, solar radiation, cosmic rays, etc.

16:30 – 18:40

Biological Physics & Life Sciences - Poster Session

THUp.BIO.1 16:30

Spectroscopic studies on binding of cationic Pheophorbide-a derivative to model polynucleotides — •Olga Ryazanova[1], Igor Voloshin[1], Igor Dubey[2], Larisa Dubey[2], and Victor Zozulya[1] — [1]Department of Molecular Biophysics, B. Verkin Institute for Low Temperature Physics and Engineering, NAS of Ukraine, 47 Lenin ave., 61103, Kharkov, Ukraine — [2]Department of Nucleotide Chemistry, Institute of Molecular Biology and Genetics, NAS of Ukraine, 150 Zabolotnogo str., 03143, Kyiv, Ukraine

The binding of new cationic Pheophorbide-a derivative to double-stranded poly(A)-poly(U), poly(G)-poly(C) and quadruplex poly(G) was investigated in buffered solutions by methods of absorption and polarized fluorescence spectroscopy in a wide range of molar phosphate-to-dye ratios.

THUp.BIO.2 16:30

The Morphological Features of a Human Cancer Cell Surface Under Reflected Light Microscope — •Adkham Paiziev and Viktor Krakhmalev — Institute of Electronics Uzbek Academy of Science, Tashkent, Uzbekistan

A technique for revealing epithelial cell membrane microstructure has been developed to facilitate early diagnostics of a pre-cancer and cancer cells under reflected light microscopy.

THUp.BIO.3 16:30

Molecular mechanism of capped-RNA binding to human nuclear CBC — •Ryszard Stolarski[1], Remigiusz Worch[1,2], Anna Niedzwiecka[1,2], Marzena Jankowska-Anyszka[3], Janusz Stepinski[1], Catherine Mazza[4,5], Edward Darzynkiewicz[1], and Stephen Cusack[4] — [1]Division of Biophysics, Institute of Experimental Physics, University of Warsaw, 93 Zwirki & Wigury St., 02-089 Warszawa, Poland — [2]Biological Physics Group, Institute of Physics Polish Academy of Sciences, 32/46 Lotnikow Ave. Warszawa, Poland — [3]Faculty of Chemistry, University of Warsaw, 1 Pasteur St., 02-093 Warszawa, Poland — [4]European Molecular Biology Laboratory, 6 rue Jules Horowitz, 38042 Grenoble Cedex 9, France — [5]Centre d'Immunologie de Marseille-Luminy, Marseille, France

Association of mRNA-cap with cap-binding complex was followed by spectroscopy and quantum calculations. A model of the recognition was compared with that for initiation factor 4E leading to clues on CBC-to-eIF4E exchange of mRNA.

THUp.BIO.4 16:30

Raman microscopy as a tool for chemical imaging of complex materials — •Anna Chiara De Luca[1,2], Giulia Rusciano[1,2], Giuseppe Pesce[1,3], and Antonio Sasso[1,2] — [1]Università di Napoli Federico II, Dipartimento di Scienze Fisiche, Via Cinthia IT-80126 Napoli, Italy — [2]CNISM- Consorzio Nazionale Interuniversitario per le Scienze Fisiche della Materia, UdR Napoli, Italy — [3]CNR-INFM Coherentia-Napoli, Via Cinthia, IT-80126 Napoli, Italy

Raman spectroscopy is exploited to characterize the diffusion properties of polymer blends.

In addition, a combination with Optical Tweezers, known as Raman Tweezers is applied to analyze single, selected erythrocytes in their natural environment.

THUp.BIO.5 16:30

Protective role of HSA in hemolysis caused by dendrimers — •Barbara Klajnert, Sylwia Pikala, and Maria Bryszewska — Department of General Biophysics, University of Lodz, Poland

It has been shown that hemotoxicity of dendrimers is lower in the presence of human serum albumin. The protective effect is related to a high affinity of dendrimers towards proteins.

THUp.BIO.6 16:30

Response of pheromone molecules to environmental factors — Felix Tomilin[1,3], Elena Sedova[1], Olesya Osina[1], Polina Volkova[2], Vyacheslav Soukhovolsky[2], Sergey Ovchinnikov[1,3], and •Tamara Ovchinnikova[2] — [1]Siberian Federal University, av. Svobodnyi 79, Krasnoyarsk 660041, Russia — [2]V.N. Sukachev Institute of Forest SB RAS, Krasnoyarsk, 660036, Russia — [3]L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, 660036, Russia

Quantum chemical calculations of the electronic structure and the total energy of several pheromone molecules of Siberian moth and its response to substances contained in forest and to electromagnetic radiation have been carried out.

THUp.BIO.7 16:30

X-ray reflectivity study of the structures formed when DNA is attached to a flat amino terminated surface: influence of DNA topology — •Luigi Cristofolini[1,2], Oleg Konovalov[3], Tatiana Berzina[1,2], Victor Erokhin[1,2], and Marco Fontana[1,2] — [1]Dipartimento di Fisica, Università di Parma, (I) and CNR- C.R.S. SOFT — [2]CNR- C.R.S. SOFT — [3]European Synchrotron Radiation Facility, Grenoble (F)

By high-energy XRR and nullellipsometry we study the interaction of DNA with lipid films at the air/water and liquid/solid interfaces, and the splitting of DNA in presence of amino-groups, showing different morphologies for linear and circular DNA of same sequence.

THUp.BIO.8 16:30

Optical Properties Of Systems Of Interest For Photovoltaic Applications — •Nicola Spallanzani[1,2], Carlo Andrea Rozzi[2], Daniele Varsano[2], Franca Manghi[1,2], and Angel Rubio[3] — [1]Department of Physics, University of Modena and Reggio Emilia, Modena, Italy — [2]CNR-INFM National Research Center S3, Modena, Italy — [3]European Theoretical Spectroscopy Facility (ETSF), Dpto. Física de Materiales, U. del País Vasco, Spain

Bioinspired light-harvesting materials are candidates for high efficiency photovoltaic devices, where the photo-induced charge separation mechanism plays a role. A TDDFT study on optical properties for a biomolecule of this class is presented.

THUp.BIO.9 16:30

Kinetic Arrest in Polyion-Induced Inhomogeneously-Charged Colloidal Particle Aggregation — •Domenico Truzzolillo, Federico Bordi, Francesco Sciortino, and Cesare Cametti — Dipartimento di Fisica, Universita' di Roma "La Sapienza", Piazzale A. Moro 5, I-00185 - Rome (Italy) and INFM CRS-SOFT, Unita' di Roma 1

We investigate the aggregation kinetics of polyion-induced colloidal complexes through Monte Carlo simulation, the effect of charge

anisotropy being taken into account by a DLVO-like intra-particle potential, as recently proposed by Velegol and Thwar.

THUp.BIO.10 16:30

The Influence of the Chemical Treatment on the Keratin Structure — •Sergiy Senchurov[1], Yuri Zabashta[1], Volodymyr Prystupa[2], and Ivan Prokhorov[3] — [1]Kyiv National Taras Shevchenko University, Physics Faculty, 03680, Glushkov pr. 2 korp.1, MSP-680 Kyiv, Ukraine — [2]The State Forensic Center of the Ministry of Internal Affairs of Ukraine, 03170, Velyka Okruzhna vul. 4, Kyiv-170, Ukraine — [3]Avtoprom Institute, 01103, Druzhby Narodiv b-r 28, Kyiv-103, Ukraine

Human hair was treated with thioglycolic acid. Increase in second order Young's modulus and infrared absorption bands shift corresponding to CH_2 and CH_3 vibrations found. Model of interstitial defects formation in keratin structure proposed.

THUp.BIO.11 16:30

Mapping the Free Energy landscape of CO diffusion in Myoglobin — Luca Maragliano[1], •Grazia Cottone[2], Lorenzo Cordone[3], Eric Vanden-Eujnden[4], and Giovanni Ciccotti[5] — [1]1.Department of Biochemistry and Molecular Biology, University of Chicago — [2]DSFA Universita' di Palermo — [3]DSFA Universita' di Palermo — [4]Courant Institute of Mathematical Sciences, New York University — [5]. Dipartimento di Fisica, Università di Roma La Sapienza

In this work, the three dimensional Free Energy landscape for the process of CO diffusion inside Myoglobin is reconstructed by using the recently introduced "single sweep method", which allows for accurate calculations in high dimensions.

THUp.BIO.12 16:30

AFM Imaging of Xenopus laevis Oocyte Plasma Membrane Purified by Ultracentrifugation — •Francesco Orsini[1], Paolo Arosio[1], Massimo Santacroce[1], Massimo Marinone[1], Sara Bettè[1], Giulio Poletti[1], Vellea Franca Sacchi[1], and Alessandro Lascialfari[1,2] — [1]Istituto di Fisiologia Generale e Chimica Biologica, Università degli Studi di Milano, Italy — [2]INFM-CNR c/o Dip. di Fisica A. Volta, Università degli Studi di Pavia and CNR-INFM-S3 NRC, I-41100 Modena, Italy

AFM investigation of native plasma membrane of Xenopus laevis oocyte purified by means of ultracentrifugation on sucrose gradient has been reported. AFM topographs, collected in a physiological buffer, have been analyzed and compared.

THUp.BIO.13 16:30

In-solution SAXS study of guanosine four-stranded helices — •Paolo Mariani, Francesco Spinozzi, and Francesco Federiconi — Dipartimento Scienze Applicate Sistemi Complessi, Università Politecnica Marche, Ancona, Italy

Guanosine shows the unique ability to self-assemble in aqueous solutions into stable, regular helicoidal structures. To describe the mechanism for helix formation, the d(Gp) self-assembling process has been analyzed by small angle X-ray scattering (SAXS).

THUp.BIO.14 16:30

Electronic Structure of Eumelanin in the Condensed Phase: Theory and Experiments — Luigi Sangaletti[1], •Patrizia Borghetti[1], Stefania Pagliara[1], Alberto Verdini[2], Albano Cossaro[2], Luca Floreano[2], Alberto Morgante[2,3], Carla Castellarin-Cudia[4], Paolo Vilmercati[4], Andrea Goldoni[4], and Ralf Gebauer[5] — [1]Dipartimento di Matematica e Fisica, Università Cattolica, via dei Musei 41, 25121, Brescia, Italy — [2]CNR-TASC, IT-34012 Basovizza, Trieste, Italy — [3]Dipartimento di Fisica, Università di Trieste, via Valerio 2, 34127, Trieste, Italy — [4]Sincrotrone Trieste S.c.P.A., IT-34012 Basovizza, Trieste, Italy — [5]ICTP and INFM-Democritos, 34127, Trieste, Italy

Synchrotron radiation spectroscopies of eumelanin thin films are used to probe the electronic structure of these biomolecules in the condensed phase. The results well compare with density functional calculations of the basic monomers.

THUp.BIO.15 16:30

Indentation modulus and hardness of collagen by AFM nanoindentation — •Daniele Passeri[1], Andrea Bettucci[1], Marco Rossi[1], Adriano Alippi[1], Sofia Berezina[2], Pavlos Anastasiadis[3], and Pavel Zinin[4] — [1]Dipartimento di Energetica, Università di Roma "La Sapienza", via A. Scarpa 16, 00161 Roma, Italy — [2]Department of Physics, University of Zilina, 01026, Univerzitna 1 Zilina, Slovakia — [3]College of Mechanical Engineering, University of Hawaii at Manoa, Honolulu, HI 96822, U.S.A. — [4]Institute of Geophysics and Planetology, University of Hawaii at Manoa, Honolulu, HI 96822, U.S.A.

Measurements of both indentation modulus and hardness of collagen fibers from breast cancer cells have been performed via atomic force microscopy nanoindentation, after calibration of the technique using a set of polymeric reference samples.

THUp.BIO.16 16:30

Spectroscopic studies on binding of Pheophorbide-a to single-stranded homopolypeptide matrix — •Igor Voloshin, Olga Ryazanova, and Victor Zozulya — B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkov, Ukraine

The binding of Pheophorbide-a to poly-L-lysine was investigated in buffered solutions by methods of absorption and polarized fluorescence spectroscopy in a wide range of molar phosphate-to-dye ratios. The binding parameters were estimated by Schwarz's method

THUp.BIO.17 16:30

What Would Injure More: Falling Face Up or Face Down? — •Himanshu Agrawal — Mechanical Engineering Group, Birla Institute of Technology and Science, Pilani – 333031, Rajasthan, India

Using functional magnetic resonance imaging data for healthy human volunteers we show that given identical head injuries, one on the posterior side is likely to be more disabling than the one on the anterior side.

THUp.BIO.18 16:30

Pore Formation Processes in the Phase Transition Regime of Lipid Membranes of POPE and POPG — •Heiko Seeger[1], Giulio Marino[1], Andrea Alessandrini[1,2], and Paolo Facci[1] — [1]CNR-INFM National Research Center on 'nanoStructures and bioSystems at Surfaces S3', NanoBioLab, Modena, Italy — [2]Department of Physics, University of Modena and Reggio-Emilia, Modena, Italy

Changing temperature or pH we triggered the formation of lipid pores in binary lipid mixtures of POPE/POPG. This led to quantized changes in membrane conductivity in the solid ordered/liquid disordered phase coexistence regime.

THUp.BIO.19 16:30

Liposome-induced DNA compaction and reentrant condensation — •Sara Zuzzi[1], Giuseppe Onori[1], Cesare Cametti[2], Federico Bordi[2], and Simona Sennato[2] — [1]Dipartimento di Fisica, Universita' degli Studi di Perugia; Via A.Pascoli, I-06123 - Perugia (Italy) and INFM CRS-SOFT, Unita' di Roma 1 — [2]Dipartimento di Fisica, Universita' di Roma "La Sapienza"; Piazzale A. Moro 5, I-00185 - Rome (Italy) and INFM CRS-SOFT, Unita' di Roma 1

We investigate the conformational behavior of DNA molecules in the presence of DOTAP liposomes. The observed structures are fundamentally of two types: liposomes clusters stuck together by DNA chains and coexisting DNA coils-DNA globules.

THUp.BIO.20 16:30

Time Decay of the Fluorescence Anisotropy in Molecular Rings: Lost of Coherence due to Disorder — •Pavel Herman[1], David Zapletal[1,2], and Ivan Barvik[3] — [1]Department of Physics, Faculty of Education, University of Hradec Kralove, Rokitanskeho 62, CZ-50003, Hradec Kralove, Czech Republic — [2]Department of Mathematics, University of Pardubice, Studentska 84, CZ-53210 Pardubice, Czech Republic — [3]Institute of Physics of Charles University, Faculty of Mathematics and Physics, Ke Karlovu 5, CZ-12116, Prague, Czech Republic

Break up of coherent exciton transfer regime is indicated in time dependence of the anisotropy of fluorescence. We compare shortening of coherence time in molecular rings due to different types of static disorder and bath.

THUp.BIO.21 16:30

Low levelled detection of Estriol-16-glucorinide in liquid media — •Xiuqian Jiang — Institute of Fundamental Science Massey university New Zealand

To detect Estriol-16-glucorinide existing in liquid media, Au labelled antibodies were synthesized. The detection limit of an assay developed with lateral flow test was pg/assay which was improved to fg/assay in SPR system.

THUp.BIO.22 16:30

The first steps of proteins aggregation leading to amyloid fibrils — •Maria Grazia Ortore[1], Raffaele Sinibaldi[1],

Francesco Spinozzi[1], Silvia Vilasi[2], Gaetano Irace[2], Theyencheri Narayanan[3], and Paolo Mariani[1] — [1]Università Politecnica delle Marche, Ancona, Italy — [2]Dipartimento di Biochimica e Biofisica, Seconda Università degli Studi di Napoli, Italy — [3]European Synchrotron Radiation Facility (ESRF), Grenoble, France

We present a time-resolved SAXS study on a mutant apomyoglobin that can be considered a new and useful approach to investigate the first stages of amiloidogenic processes.

THUp.BIO.23 16:30

Prion protein molecular-level investigation related to copper deprivation in B104 neuroblastoma cell model by Raman Spectroscopy — •Antonio Serra[1], Daniela Manno[1], Emanuela Filippo[1], Roberta Fiore[2], Emanuela Urso[2], and Michele Maffia[2] — [1]Dept. of Materials Science - University of Salento I-73100 Lecce (Italy) — [2]Dept. of Biol. and Environ. Science and Technology - University of Salento I-73100 Lecce (Italy)

In this work we show preliminary results obtained by Raman spectroscopy performed onto a rat neuroblastoma cell model (B104), known to overexpress the cellular prion protein PrPC

THUp.BIO.24 16:30

SAS simulations to filter candidate protein models — •Andrea Carbini[1], Francesco Spinozzi[1], Serena Mazzoni[1], Luigi Ferrante[2], and Paolo Mariani[1] — [1]Università Politecnica delle Marche, Dipartimento Scienze Applicate Sistemi Complessi, Ancona (Italy) — [2]Università Politecnica delle Marche, Istituto di Microbiologia e Scienze Biomediche, Ancona (Italy)

Small Angle Scattering (SAS) analysis is used to help in assessing ab-initio protein structure prediction. SAS simulated curves are calculated for all protein structure models produced during the CASP6 and the obbtained model ranking discussed.

THUp.BIO.25 16:30

EPR study on paramagnetic species induced in aluminosilicate compounds by gamma ray irradiation — •Emilia Vanea[1,2] and Viorica Simon[1,2] — [1]Babes-Bolyai University, Faculty of Physics , Cluj-Napoca, Romania — [2]Institute for Interdisciplinary Experimental Research, Cluj Napoca, Romania

Electron paramagnetic resonance (EPR) spectroscopy was used to characterize paramagnetic centres occurring in gamma ray irradiated aluminosilicate systems containing rare earth and iron that could be used for biomedical applications in local radiotherapy and hyperthermia.

THUp.BIO.26 16:30

DSC and XRD study of pristine and calcinated bones — •Viorica SIMON — Babes-Bolyai University, Faculty of Physics, 400084 Cluj-Napoca, Romania

The study is focussed on structural changes determined by heat treatment of different bones in order to prove the possibility to obtain hydroxyapatite usable for biomedical coating applications.

THUp.BIO.27 16:30

GiSAXS investigation of surfaces functionalized with a proteins using plasma polymer deposition — •Raffaele Sinibaldi, Maria Grazia Ortore, Francesco Spinozzi, and Paolo Mariani — Università Politecnica delle Marche, Ancona Italy

Proteins embedded in thin polymer films via plasma deposition were studied by using a new method for the simultaneous fitting of 2D Grazing-incidence small-angle X-ray images.

THUp.BIO.28 16:30

Phosphatidyl ethanolamine ether phospholipids - A computational study — •Jelena Telenius[1], Tomasz Róg[1], and Ilpo Vattulainen[1,2] — [1]Helsinki University of Technology, Laboratory of Physics, P.O. Box 1100, FI-02015 TKK, Finland — [2]Tampere University of Technology, Laboratory of Physics, Finland

Ether phospholipids are an ubiquitous, scarcely investigated group of membrane lipids. We present a molecular dynamics study on phosphatidyl ethanolamine ether phospholipide bilayer.

THUp.BIO.29 16:30

Stability and Mutagenesis analysis of Cardiac Myosyn Binding Protein C through molecular dynamics simulation approach — Fabio Cecconi[1], Carlo Guardiani[2], and •Roberto Livi[3] — [1]INFM-Center Statistical Mechanics Complexity and Istituto dei Sistemi Complessi (ISC-CNR) — [2]Centro Interdipartimentale per lo Studio delle Dinamiche Complesse (CSDC) — [3]Dipartimento di Fisica Universita' di Firenze

We assess the impact of mutations on C5-domain from protein MyBP-C, via MD simulations. We show that mutations severity correlates to: unfolding temperature shifts of mutants, Phi-value analysis and variation of unfolding kinetic rates.

THUp.BIO.30 16:30

Uncoated fiber tips for scanning near-field optical microscopy obtained by tube etching — •Emilio Mezzenga — Dipartimento di Scienze Biomediche, Foggia, Italy

We have fabricated SNOM probes in silica optical fibers by means of tube etching method and we have analyzed the influence of some etching parameters on final geometry of the tip and their geometrical characteristics.

THUp.BIO.31 16:30

Raman spectroscopy of cellular damage in human keratinocytes treated with organophosphate compounds — Maria Lasalvia[1], Nicola L'Abbate[1], Giuseppe Perna[2], Emilio Mezzenga[2], and •Vito Capozzi[2] — [1]Dipartimento di Scienze Mediche e del Lavoro, Università di Foggia, Viale Pinto, 71100 Foggia (Italia) — [2]Dipartimento di Scienze Biomediche, Università di Foggia, Viale Pinto, 71100 Foggia (Italia)

Biochemical modifications of single human keratinocytes treated with different organophosphate compounds at different concentrations were revealed by Raman microspectroscopy. They consist of breakdown of membrane lipidic layers and DNA bonds and fragmentation of DNA bases

16:30 – 18:40

Polymer Physics - Poster Session

THUp.POL.1 16:30

Characterization of Novel Selected Polyurethane Copolymers Derived From Crystallizable Hard Segments With a Coplanar Packing — •Cristina Prisacariu — Institute of Macromolecular Chemistry Petru Poni, Iasi, Romania

The contribution has been withdrawn by the authors.

THUp.POL.2 16:30

The Effect of Hard Segment Ordering on The Crystallinity of Novel Thermoplastic Copolyurethane Elastomers Based on Mixtures of Flexible and Rigid Diisocyanates — •Cristina Prisacariu — Institute of Macromolecular Chemistry Petru Poni, Iasi, Romania

The contribution has been withdrawn by the authors.

THUp.POL.3 16:30

Influence of the Hydrogen Bonding on The Physical-Mechanical Properties of Thermoplastic Polyurethanes Based on Hard Segments of Rigid and Variable Geometries — •Cristina Prisacariu and Elena Scortanu — Institute of Macromolecular Chemistry Petru Poni, Iasi, Romania

The contribution has been withdrawn by the authors.

THUp.POL.4 16:30

Novel Polyurethane-Ureas With Dibenzyl Structures and Assymetric Aromatic Diamines — •Cristina Prisacariu and Elena Scortanu — Institute of Macromolecular Chemistry Petru Poni, Iasi, Romania

The contribution has been withdrawn by the authors.

THUp.POL.5 16:30

Novel Polyurethanic Blends Based on Dibenzyl Structures and The Nano-Structural Origins of their Physical Properties — •Cristina Prisacariu and Elena Scortanu — Institute of Macromolecular Chemistry Petru Poni, Iasi, Romania

The contribution has been withdrawn by the authors.

THUp.POL.6 16:30

Multiscale Simulations of Polybutadiene Solutions — •Thomas Strauch and Wolfgang Paul — Institute for Physics, Johannes Gutenberg-University Mainz, Germany

We propose a new, systematic coarse-graining procedure for the nonbonded part of the interactions of a polymer taking equation of state data from atomistic simulations or experiments into account.

THUp.POL.7 16:30

The optical properties and the electrical conductivity of organic polymer -C60 composite — Caraman Iuliana[1], Nedeff Valentin[1], Lazar Gabriel[1], Robu Stefan[2], •Stamate Marius[1], Lazar Iuliana[1], and Rusu Dragos[1] — [1]Engineering Department, The University of Bacau, Calea Marasesti 157, Bacau, 600115 Romania — [2]The State University of Moldova, Mateevici 60 str., Kishinev, MD-2009, R. Moldova

The absorption in UV and visible range and the electrical conductivity of PVA and C60 thin films were studied. The relationship between the edge of absorption band and the density of compounds were appraised.

THUp.POL.8 16:30

The optical properties of CdS- polyvinyl alcohol — •Caraman Iuliana[1], Lozovanu Petru[2], Stamate Marius[1], Vatavu Sergiu[2], and Lazar Iuliana[1] — [1]Engineering Department, The University of Bacau,Calea Marasesti 157, Bacau, 600115, Romania — [2]The State University of Moldova, Mateevici 60 str., Kishinev, MD-2009, R. Moldova

The nanocomposite thin films on glass were obtained by thermal treatment of the Cd(NO3)2, NH2CSNH2 dissolved in aqua and PVA organic polymer (in 40% ethyl alcohol). The absorption, emission and luminescence spectra were analyzed.

THUp.POL.9 16:30

Coorelations between polymer crystals generated by self-seeding — •Yu Ma[1,2], Jianjun Xu[3,4], Wenbing Hu[2], Matthias Rehahn[3,4], and Günter Reiter[1] — [1]Institut de Chimie des Surfaces et Interfaces, ICSI-UHA-CNRS, 15, rue Jean Starcky, B.P. 2488, Mulhouse Cedex, France — [2]State Key Laboratory of Coordination Chemistry, School of Chemistry and Chemical Engineering, Department of Polymer Science and Engineering, Nanjing University, Nanjing, China — [3]Institut für Makromolekulare Chemie, TU Darmstadt, Petersenstrasse 22, Darmstadt, Germany — [4]Deutsches Kunststoff-Institut, Schlossgartenstrasse 6, Darmstadt, Germany

We report that correlated polymer crystals of uniform size and orientation can be generated via self-seeding, because thicker regions within lamellar single crystals can resist melting and so, after cooling, act as nuclei for re-growing many identical crystals simultaneously.

THUp.POL.10 16:30

Continuous versus first-order collapse transitions of simple, flexible homopolymers: A Monte Carlo Simulation — •Wolfgang Paul[1], Federica Rampf[2], Thomas Strauch[1], and Kurt Binder[1] — [1]Institut f. Physik, Johannes Gutenberg University, 55099 Mainz, Germany — [2]Institut f. Mikrotechnik Mainz, Carl-Zeiss Str.18-20, 55129 Mainz, Germany

Using flat histogram Monte Carlo simulations of a simple, flexible homopolymer model we have shown that the collapse transition of such polymers is not necessarily continuous, as generally assumed, but can be of first order.

THUp.POL.11 16:30

Molecular weight dependence of the crystalline-amorphous superstructure of semi-crystalline polymers — •Albrecht Petzold, Thomas Henze, and Thomas Thurn-Albrecht — Institut für Physik, Martin-Luther-Universität Halle-Wittenberg, D-06099 Halle, Germany

Using SAXS the molecular weight dependence of the crystalline-amorphous superstructure of polyethyleneoxide after isothermal crystallization was studied. In contrast to predictions from common theoretical models the crystalline and amorphous layer thickness both depend strongly on molecular weight.

THUp.POL.12 16:30

Dynamics of chains with rigid constraints — •Franco Ferrari[1] and Jaroslaw Paturej[2] — [1]Institute of Physics and CASA*, University of Szczecin, Szczecin, Poland — [2]Institute of Physics and CASA*, University of Szczecin, Szczecin, Poland

The dynamics of a freely jointed chain with constraints is described with the help of a generalized sigma model. Applications to the dynamics of DNA and protein chains, as well as a comparison with the Rouse model will be presented.

THUp.POL.13 16:30

Carbon nanotubes based devices for electromagnetic screening — •Stefano Bellucci — INFN-Laboratori Nazionali di Frascati

I show a systematic study of the electrical and mechanical properties of carbon nanotube-based polymeric composite materials useful to high-fidelity circuits applications, or even in devices exposed to predominantly electromagnetic noise.

THUp.POL.14 16:30

Laser Treatment for the modification of Polymeric Surface — •Vincenzo Nassisi[1], Antonella Lorusso[1], Fabio Paladini[1], Antonio Rainò[2], Maria Vittoria Siciliano[3], and Luciano Velardi[2] — [1]Department of Physics, Laboratorio di Elettronica Applicata e Strumentazione, LEAS, University of Salento. INFN, SS Lecce-Monteroni CP193, 73100 Lecce-Italy — [2]Department of Physics, University of Bari, via Amendola, 173, 70126 Bari-Italy — [3]Department of Material Science, University of Salento, INFN, Lecce-Italy

We studied surface modification of the Poly(methyl-methacrylate) and Ultra High Weight Molecular Polyethylene by UV and IR lasers. The UV laser was efficient on both polimers, while the IR induced modification only on the Poly(methyl-methacrylate)

THUp.POL.15 16:30

Crystallization of Homopolymer in the Presence of Additive — •Ashok Das Mahapatra[1,2], Guruswamy Kumaraswamy[2], and Hemnat Nanavati[1] — [1]Department of Chemical Engineering, Indian Institute of Technology Bomaby, Mumbai - 400076, India — [2]Polymer Science and Engineering Division, National Chemical Laboratory, Pune - 411008, India

Interplay between monomer-additive interaction and crystallization leads to a non-monotonic behavior in specific heat, unlike crystallinity and chain diffusion, near phase transition. We justified our argument with monomer density fluctuation and crystallization kinetics.

THUp.POL.16 16:30

Structure of oppositely charged polyelectrolyte complexes. — •Valentina Mengarelli[1], Loic Auvray[2], and Mehdi Zeghal[1] — [1]Laboratoire de Physique des Solides, CNRS-UMR8502, Université de Paris-Sud, Orsay, France. — [2]Laboratoire Matériaux Polymères aux Interfaces, Université d'Evry, 91025 Evry, France.

We have obtained the phase diagram and the stability region of polyelectrolytes complexes (B/L-PEI, PMA, PssNa). We also studied structure and dynamics of aggregates within several experimental techniques (DLS, SANS, NMR, turbidimetry, zeta potential).

THUp.POL.17 16:30

Nonlinear holographic formation of photonic structures in photopolymer-based nano-composites — •Sergey Sharangovich, Eugene Dovolnov, and Vyacheslav Mirgorod — Tomsk State University of Control System and Radioelectronics, 634050 Tomsk, Lenin avenue 40, Russia

We present analytical model of multibeam nonlinear holographic record of 3D photon structures in absorbent photopolymer composite materials with nanoparticles. We examined influence of the material and record parameters on 3D refraction index distribution

THUp.POL.18 16:30

Non-steady-state photocurrents in polypyrrole nanostructures within chrysotile asbestos matrix — •Igor Sokolov, Mikhail Bryushinin, Victor Semkin, and Yurii Kumzerov — A.F. Ioffe Physical Technical Institute, 194021, St. Petersburg,

We report the experimental investigation of the non-steady-state photoelectromotive force in polypyrrole nanostructures within chrysotile asbestos. The diffusion length of carriers is estimated: $L_D=0.18$ μm.

THUp.POL.19 16:30

Synthesis and characterization of Poly(ethylene oxide)-capped Gold Nanoparticles combining TEM, TGA, mass and neutron scattering — •Marco Maccarini[1], Giuseppe Briganti[2], Simona Rucareanu[3,4], and Bruce Lennox[4] — [1]Institut Laue-Langevin, FR-38042 Grenoble, France — [2]Universit\'a di Roma "La Sapienza", IT- 60131 Roma, Italy — [3]Current address: TNO Holst Centre, 5656 Eindhoven, The Netherlands — [4]Dep. of Chemistry, McGill University, Montreal, Canada

Novel synthesis of poly (ethylene glycols) stabilized gold nanoparticles will be presented. The structure and dynamics of these particle in solution were studied with density, TGA, SANS and neutron spin echo spectroscopy.

THUp.POL.20 16:30

Entanglement features and experimental linear viscoelastic response of oolyethylene melts — •Juan F. Vega, Javier Ramos, and Javier Martínez-Salazar — Departamento de Física Macromolecular, Instituto de Estructura de la Materia (CSIC), Serrano 113 bis, 28006 Madrid (Spain)

The study of the melt mechanical dispersion of polyethylenes has revealed strong dependencies of the entanglement features with the molecular architecture. We discuss these features in the framework of the reptation model.

THUp.POL.21 16:30

XRD, FTIR, TEM, TSDC and DSC Characterization of Polymer Nanocomposites Prepared from Montmorillonite Natural Clay — •Nery Suárez[1], Norkis Salazar[2], Jose Luis Feijoo[3], and Maria Cristina Hernández[1] — [1]Departamento de Física, Universidad Simón Bolívar, Caracas 1080, Venezuela — [2]Departamento de Química, Universidad Simón Bolívar, Caracas 1080, Venezuela — [3]Departamento de Ciencia de los Materiales, Universidad Simón Bolívar, Caracas 1080, Venezuela

We have studied the morphology, molecular motions, dielectric and thermal properties of a series of polymer-clay nanocomposites, prepared by the exfoliation-adsorption technique, from water-soluble and insoluble polymers, and natural and organically modified montmorillonite.

THUp.POL.22 16:30

Effects of nanoscale dispersion in the dielectric properties of polymer/clay nanocomposites — •María Cristina Hernández[1], Nery Suárez[1], and José Luis Feijoo[2] — [1]Departamento de Física, Universidad Simón Bolívar Apartado 89000, Caracas 1080-A, Venezuela — [2]Departamento de Ciencias de los Materiales, Universidad Simón Bolívar Apartado 89000, Caracas 1080-A, Venezuela

We investigate the effects of clay proportion and nanoscale dispersion in dielectric response of Poly(vinyl alcohol)/Bentonite nanocomposites. Results indicate the existence of polymer-clay interactions through the formation of hydrogen bounds.

THUp.POL.23 16:30

Generalized non-linear sigma model applied to the description of the dynamics of a random chain with rigid constraints — •Jarosław Paturej and Franco Ferrari — Institute of Physics and CASA*, University of Szczecin, Szczecin, Poland

In this contribution a model of the dynamics of a fluctuating freely jointed chain immersed in a thermal bath is considered. This description, unlike standard approaches, takes into account rigid constraints which forbid the breaking of the chain.

THUp.POL.24 16:30

Monte Carlo simulations of supramolecular polymer self-assembly with patchy particles — Bastiaan A. H. Huisman[1], Peter G. Bolhuis[1], and •Annalisa Fasolino[1,2] — [1]Van 't Hoff Institute for Molecular Sciences, University of Amsterdam, Nieuwe Achtergracht 166, 1018 W*V Amsterdam, The Netherlands — [2]Institute for Molecules and Materials, Radboud University Nijmegen, Heyendaalseweg 135, 6525AJ Nijmegen, The Net*herlands

We use patchy particles with directional interactions to simulate the self-assembly of monomers into supramolecular fibers. We find a first-order phase transition from flexible fibers to solid bundles for which we present a phase diagram.

THUp.POL.25 16:30

On the Electronic Transport and Optical Properties of Polysulfone-Polydimethylsiloxane Copolymers in Thin Films — •Mihaela Rusu[1], Anton Airinei[2], Viorica hamciuc[2], Petronela Rambu[1], and George Rusu[1] — [1]"Al.I. Cuza University", Faculty of Physics, 11 Carol I blvd., RO-700506, Iasi, Romania — [2]"Petru Poni" Institute of Macromolecular Chemistry, aleea Gr. Ghica Voda 41A, RO-709487, Romania

Electronic transport and optical properties of semiconducting polysulfone-polydimethylsiloxane copolymers in thin films are investigated. These properties are discussed in correlation with the molecular structure, which affords an extended conjugation of the electrons.

THUp.POL.26 16:30

Diblock Copolymer Self Assembly — •Barbara Capone[1], Jean-Pierre Hansen[1], Carlo Pierleoni[2], and Vincent Krakoviack[3] — [1]Department of Chemistry, University of Cambridge, Cambridge CB2 1EW, United Kingdom — [2]INFM CRS-SOFT, and Department of Physics, University of L'Aquila, I-67010 L'Aquila, Italy — [3]Laboratoire de Chimie, Ecole Normale Superieure de Lyon, 69364 Lyon Cedex 07, France

Two step coarse graining analysis of the entropical self-assembly of diblock-copolymers in a selective solvent.

From a microscopic model we investigate the self-assembly of a semi dilute solutions of A-B diblock copolymers into polydisperse micelles.

THUp.POL.27 16:30

Chain conformations and structure development in electrospun fibres of polymers — Saeed Mohan[1], Sujat Sen[1], Delyth Elliott[1], Fred Davis[1], Mahadevappa Kariduraganavar[1,2], •Geoffrey Mitchell[1], and Robert Olley[1] — [1]Polymer Science Centre, University of Reading, Whiteknights, Reading, RG6 6AF UK — [2]Department of Chemistry, Karnatak University, Dharwad 580 003, India

We use small-angle neutron scattering techniques with labelled mixtures of polymers to quantify the details of the chain conformations in nanoscale electrospun fibres including the level of preferred orientation and their relationship with spinning conditions

THUp.POL.28 16:30

Influence of Electric Fields on the Phase Behavior of Concentrated Block Copolymer Solutions — •Heiko Schoberth, Kristin Schmidt, and Alexander Böker — Universität Bayreuth, Bayreuth, Germany

We investigate the influence of the electric field on the order-disorder transition temperature of diblock copolymer in concentrated solutions using Synchrotron SAXS. In addition we show reversible order-order and order-disorder transitions induced by electric fields.

16:30 – 18:40

Liquids, Disordered and Off-Equilibrium Systems - Poster Session

THUp.LIQ.1 16:30

Siloxane-Containing Surfactants and Their Use for Stabilization of Nanoparticles — •Carmen Racles, Maria Cazacu, and Aurelia Ioanid — Petru Poni Institute of Macromolecular Chemistry, Iasi, Romania

The surface properties of disiloxanes, cyclic and linear oligomers and side-chain polysiloxanes bearing hydrophilic groups will be presented, as well as their ability to stabilize metal and polymer nanoparticles obtained by nanoprecipitation or chemical reactions.

THUp.LIQ.2 16:30

Optical Polarizing Microscopy Evidences for Higher Ordered Smectic Crystalline Phase of a Bifunctional Azomethine Intermediate — •Vasile Cozan, Elena Perju, Magda Aflori, Daniel Timpu, and Vasile Cristian Grigoras — Petru Poni Institute of Macromolecular Chemistry, Iasi, Romania

New calamitic azomethine intermediate having chlorine and aldehyde functional end groups exhibited smectic and nematic phases under optical microscopy. The smectic phase was assigned to be higher ordered smectic crystalline phase, being hard when pressed.

THUp.LIQ.3 16:30

Investigating nanosized undercooled liquids by x-ray absorption and diffraction techniques — •Emiliano Principi[1], Marco Minicucci[1], Giorgia Greco[1], Luca Olivi[2], Massimo Centazzo[2], Konrad Trzebiatowski[3], Agnieszka Witkowska[1,3], Angela Trapananti[4], Giuliana Aquilanti[4], and Andrea Di Cicco[1] — [1]CNISM, CNR-INFM SOFT and Dipartimento di Fisica, Universita' di Camerino via Madonna delle Carceri, I-62032 Camerino (MC) Italy — [2]ELETTRA - Sincrotrone Trieste S.C.p.A. Strada Statale 14 - km 163,5 in AREA Science Park 34012 Basovizza, Trieste ITALY — [3]Department of Solid State Physics, Gdansk University of Technology, 80-952 Gdansk, Poland — [4]European Synchrotron Radiation Facility, 6 rue Jules Horowitz, Bote Postale 220, 38043 Grenoble Cedex, France

Stable and metastable liquid structure of nanosized Bi droplets has been investigated combining x-ray absorption spectroscopy and angular dispersive x-ray diffraction. Structural and phase transition anomalies revealed in the nanosized samples are discussed.

THUp.LIQ.4 16:30

Nonlinear Optical Susceptibility of Out-of-Equilibrium Colloidal Dispersion — •Neda Ghofraniha[1], Claudio Conti[1,2], Giancarlo

Ruocco[1,3], and Francesco Zamponi[4] — [1]Dipartimento di Fisica, Universita' di Roma "La Sapienza", P. A. Moro 2, 00185, Roma, Italy — [2]Research Center "Enrico Fermi", Via Panisperna 89-A,00184 Rome, Italy — [3]Soft-Infm-Cnr, Universita' di Roma "La Sapienza", P.A. Moro 2, 00185, Roma, Italy — [4]Laboratoire de Physique Theorique, Ecole Normale Superieure,24 Rue Lhomond, 75231 Paris Cedex 05, France

We illustrate the time-dependent nonlinear optical susceptibility of a clay-dye-water dispersion displaying dynamics slowing down and we show that self-diffusion and collective relaxation times ratio decreases during the aging: an experimental evidence of dynamical heterogeneity.

THUp.LIQ.5 16:30

Effect of Gravity in Confined System — Alexander Alekhin[1], Bakhytkhan Abdikarimov[2], Eugene Rudnikov[1], and •Yuriy Ostapchuk[1] — [1]Kyiv National Taras Shevchenko University, Physics Department, Prosp. Glushkova, 2, build. 1, Kyiv 03022, Ukraine — [2]Kyzyl-Orda State University, Ajteke Bi, 29A, Kyzyl-Orda, 120014, Kazakstan

Liquid macrosystem near the critical state becomes inhomogeneous due to gravity effect. Nevertheless the thermal motion in nanosystem destroys the action of gravity field. The system size criterion has been obtained for gravity effect existence.

THUp.LIQ.6 16:30

Beyond the dynamic Density Functional theory:*the role inertial dynamics. — •Umberto Marini Bettolo Marconi — University of Camerino, Camerino, Italy

We consider a system of interacting particles subjected to inertial dynamics and derive via a multiple time scale technique the governing time-dependent equation for the one-body density.

THUp.LIQ.7 16:30

The Oli potential within the Wills-Harrison approach for the quantitative description of the liquid transition metals thermodynamics — •Nikolay Dubinin, Leonid Son, and Nikolay Vatolin — Institute of Metallurgy of the Ural Division of the Russian Academy of Sciences, Amundsen st. 101, 620016, Ekaterinburg, Russia

The Wills-Harrison approach in conjunction with the Oli model pseudopotential is used to calculate the thermodynamic properties of Fe, Co, and Fe-Co melts in the framework of the thermodynamic perturbation theory.

THUp.LIQ.8 16:30

Colloidal Volumes of Coexisting Phases by Free Energy Minimization — GuanFei Wang and •SanKiong Lai — Complex Liquids Laboratory, Department of Physics, National Central University, Chungli 320, Taiwan

Colloidal coexisting phases are treated as a composite system whose free energy density fm is written as the fractional volume average of its constituent free energy densities. Minimizing fm yields the domains of coexisting phases.

THUp.LIQ.9 16:30

Water structure and dynamics in aqueous solutions of sugars by depolarized light scattering — •Lucia Comez[1,2], Daniele Fioretto[1,2], Marco Paolantoni[3], Maria Elena Gallina[3], Paola Sassi[3], Assunta Morresi[3], and Filippo Scarponi[1] — [1]Dipartimento di Fisica, Università di Perugia, IT-06123 Perugia, Italy — [2]CRS SOFT-INFM-CNR, Università di Roma La Sapienza, IT- 00185 — [3]Dipartimento di Chimica, Università di Perugia, IT-06123 Perugia, Italy

We describe experiments by depolarized light scattering in water-glucose and water-trehalose solutions that show up separate dynamics of solute and solvent. Interesting suppositions about the contribution of bulk and hydration water molecules are presented.

THUp.LIQ.10 16:30

Picosecond dynamics of molecular liquids as a probe of long-living dimer geometries — •Ubaldo Bafile[1], Fabrizio Barocchi[2,4], Eleonora Guarini[2,4], Marco Sampoli[3,4], and Giovanni Venturi[2,4] — [1]CNR Istituto dei Sistemi Complessi, sezione di Firenze, Firenze, Italy — [2]Dipartimento di Fisica, Università di Firenze, Firenze, Italy — [3]Dipartimento di Energetica, Università di Firenze, Firenze, Italy — [4]CNR-INFM and CRS Soft, c/o Dipartimento di Fisica, Università La Sapienza, Roma, Italy

Neutron inelastic scattering and molecular dynamics simulations on simple molecular liquids reveal the existence of pair structures living on the picosecond time scale and depending on the interaction anisotropy and energy.

THUp.LIQ.11 16:30

$bcc-hcp$ phase coexisting range in dilute $^3He-^4He$ solid mixture — •Yegor Vekhov, Alexandr Birchenko, and Nikolay Mikhin — B.Verkin Institute for Low Temperature Physics and Engineering, 47 Lenin Ave., Kharkov 61103, Ukraine

^4He crystals and $^3He-^4He$ solid mixtures are studied by precise pressure measurements technique. $P-T$ phase diagram of 1% $^3He-^4He$ solid mixtures of different densities is constructed for $bcc-hcp$ phase coexistence range for the first time.

THUp.LIQ.12 16:30

Spontaneously-broken-symmetry and entropy-driven-like phase transitions of the first order in a lattice model — •Jacek Damczyk, Andrzej Radosz, and Katarzyna Ostasiewicz — Institute of Physics, Wroclaw University of Technology, Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland

One-dimensional lattice model of harmonically coupled, triple-well on-site potentials, is considered. It is shown that in the case of the particular asymmetry, characteristic sequence of the two phase transformations of different origins is observed.

THUp.LIQ.13 16:30

Excited states properties of formamide in water solution — •Viviana Garbuio[1], Michele Cascella[2], Rodolfo Del Sole[1], and Olivia Pulci[1] — [1]ETSF, SMC-INFM-CNR and Physics department, University of Rome Tor Vergata, Italy — [2]Ecole polytechnique Federale de Lausanne (EPFL), Switzerland

We present the electronic and optical spectra of formamide in solution, obtained with different approaches: Density Functional Theory, Green's function theory and TDDFT.

THUp.LIQ.14 16:30

Heat Capacity of Inhomogeneous Systems under Earth Gravity near the Critical Point — Alexander Alekhin, Leonid Bulavin, •Eugene Rudnikov, and Yuriy Ostapchuk — Kyiv National Taras Shevchenko University, Physics Department, Prosp. Glushkova, 2, build. 1, Kyiv 03022, Ukraine

It has been revealed that the heat capacity of inhomogeneous liquid has nonmonotonic temperature and field dependences. The equations for these extremes lines have been derived on the basis of the "linear model".

THUp.LIQ.15 16:30

Shift of Critical Parameters of Nanosystems near the Critical Point — •Alexander Alekhin — Kyiv National Taras Shevchenko University, Physics Department, Prosp. Glushkova, 2, build. 1, Kyiv 03022, Ukraine

The features of macro-inhomogeneous fluids under gravity near the critical point have been compared with the properties of nano-systems near the critical point; the shifts of the critical parameters for nano-system have been calculated.

THUp.LIQ.16 16:30

Local proton ordering effect in crystalline clathrate hydrate of tetrahydrofuran — •Olesya Romantsova and Alexander Krivchikov — B.Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkov, Ukraine

The effect of proton ordering in tetrahydrofuran hydrate has been detected using a technique based on measurement of thermal conductivity. Proton ordering affects the temperature dependence of the thermal conductivity changing its glass-like behavior to crystal-like below 150 K.

THUp.LIQ.17 16:30

Nature of Hydrophobic Collapse and Cold Denturation in a Simple Model of Water — •Sergey Buldyrev and Saul Weiner — Department of Physics, Yeshiva University, 500W 185th Street, New York, NY, 10033, USA

Using molecular dynamics, we examine the hydrophobic collapse of a bead-on-a-string hard sphere polymer in a water model whose particles interact via a spherically symmetric potential. This model provides understanding of protein cold denaturation.

THUp.LIQ.18 16:30

Collective Modes in Phonon Pulses in Superfluid ^{4}He — Igor Adamenko[1], Konstantin Nemchenko[1], •Valeriy Slipko[1], and Adrian Wyatt[2] — [1]V. Karazin Kharkov National University, Svobody Sq. 4, Kharkov, 61077, Ukraine — [2]School of Physics, University of Exeter, Exeter EX4 4QL, United Kingdom

Collective modes, which exist in phonon pulses in superfluid helium, are studied.

THUp.LIQ.19 16:30

A general microscopic approach to the study of heterogeneous nucleation phenomenon based on the classical nucleation theory — •Andrey Sarikov — V. Lashkarev Institute of Semiconductor Physics NAS Ukraine, 45 Nauki avenue, Kiev 03028, Ukraine

In this work, the microcropic approach to the study of heterogeneous bulk and interface nucleation in the supersaturated solutions is suggested based on the classical nucleation theory.

THUp.LIQ.20 16:30

Description of supercooled liquids and glasses in the model of defected states of bond orientation order — •Mikail Vasin — Physical-Technical Institute, Ural Branch of Russian Academy of Sciences, 132 Kirov st., 426000 Izhevsk, Russia

Basic properties of the supercooled liquids and glasses are sequentially described in the framework of single theory based on the model of defected states of bond orientation order.

THUp.LIQ.21 16:30

Nucleation and growth in a phase-field model using cell dynamics system: From the classical nucleation regime to the spinodal regime — •Masao Iwamatsu — Musashi Institute of Technology, Tokyo 158-8557, Japan

In this paper, we use the two-dimensional phase-field model with cell dynamic system to study the kinetics of not only the nucleation but the growth from classical nucleation to spinodal regime.

THUp.LIQ.22 16:30

On viscosity features of the Al-Ni (up to 10 at. % of Ni) melts — Vladimir Lad'yanov[1], Svetlana Men'shikova[2], and •Anatoliy Belt'yukov[1] — [1]Physical-Technical Institute, Ural Branch of Russian Academy of Sciences, 132 Kirov st., 426000 Izhevsk, Russia — [2]Science Reseach Institute Termphysics of New Materials, Udmurt State University, 1 Universitetskaya Str., Izhevsk, 426034, Russia

Nonmonotonic dependence of kinematic viscosity of Al-Ni melts has been observed in the concentration curve up to 10 atomic percents of Ni.

THUp.LIQ.23 16:30

Characterisation of Refractive Index for Singlelayer and Multilayer Chalchogenide Thin Films — •Svetlana Lukić, Mirjana Šiljegović, Dragoslav Petrović, and Ljubica Djačanin — Faculty of Sciences,Novi Sad, Serbia

Refractive index of singlelayer As2S3 and Se60Te40 thin films and multilayer As2S3/Se60Te40 film was determined. We found that the refractive index shows normal dispersion behaviour and high values in the vicinity of the absorption edge.

THUp.LIQ.24 16:30

Cation-substitution optimization effects in chalcogenide semiconducting glasses — Oleh Shpotyuk[1,2], •Mihail Iovu[3], Mykola Vakiv[1], Yaroslav Shpotyuk[1,4], Roman Golovchak[1], and Taras Kavetskyy[1] — [1]Lviv Institute of Materials of SRC Carat, 202, Stryjska str., Lviv, UA-79031, Ukraine — [2]Institute of Physics of Jan Dlugosz University 13/15, al. Armii Krajowej, Czestochowa, Pl-42201, Poland — [3]Center of Optoelectronics, Institute of Applied Physics, 1, Academiei str., Chisinau, MD-2028, Moldova — [4]Ivan Franko National University of Lviv, 50, Dragomanov str., Lviv, UA-79005, Ukraine

Correlation relationships between exploitation parameters of ternary Ge-Sb-S and quasibinary As2S3-Sb2S3 glasses, their structural-compositional features and externally-induced effects were developed for the first time using high-resolution X-ray photoelectron spectroscopy and high-energy synchrotron-based X-ray diffractometry.

THUp.LIQ.25 16:30

Kinetics-descriptive algorithm for photosoaked relaxation in amorphous chalcogenide films — •Valentina Balitska[1,2], Mihail Iovu[3], and Oleh Spotyuk[1,4] — [1]Lviv Institute of Materials of SRC Carat, 202, Stryjska str. Lviv, 79031, Ukraine — [2]Lviv State University of Vital Safety, 35, Kleparivska str., Lviv, 79000, Ukraine — [3]Center of Optoelectronics of the Institute of Applied Physics of Academy of Sciences of Moldova MD-2028, Academiei , 1, Chisinau, Moldova — [4]Institute of Physics of Jan Dlugosz University,13/15, al. Armii Krajowej, Czestochowa, 42201, Poland

Adequate algorithm to describe photosoaked relaxation kinetics in As2Se(S)3 thin films was developed taking into account three possible elementary processes: photoinduced formation of coordination topological defects, their thermally-stimulated annihilation and irreversible overheating-induced destruction-polymerization transformations.

THUp.LIQ.26 16:30

Thermodynamics and structural properties of aqueous sodium chloride solutions upon supercooling — •Dario Corradini, Paola Gallo, and Mauro Rovere — Dipartimento di Fisica, Università "Roma Tre", Via della Vasca Navale 84, I-00146 Roma, Italy

Molecular dynamics simulations are carried out on aqueous sodium chloride solutions. Thermodynamic and structural properties of the solutions are analyzed and compared to those of bulk water upon supercooling.

THUp.LIQ.27 16:30

Four-phonon relaxation in isotropic and anisotropic phonon systems of superfluid helium — Igor Adamenko[1], •Yuriy Kitsenko[2], Konstantin Nemchenko[1], and Adrian Wyatt[3] — [1]Karazin Kharkov National University, Svobody sq. 4, Kharkov, 61077, Ukraine — [2]Akhiezer Institute for Theoretical Physics, National Science Center "Kharkov Institute of Physics and Technology", 1, Academichеskaya St., Kharkov, 61108, Ukraine — [3]School of Physics, University of Exeter, Exeter, EX4 4QL, UK

Four-phonon processes in isotropic and anisotropic phonon systems of superfluid helium in all momentum range are investigated. Comparison of obtained results with experimental data on interaction of phonon pulses is made.

THUp.LIQ.28 16:30

High-frequency acoustic modes in glasses and their relation to the thermal conductivity: an inelastic x-ray scattering study — •Giulio Monaco — European Synchrotron Radiation Facility, Grenoble, France

We discuss the connection among the well known thermal anomalies observed in glasses temperatures of at 10 K and the acoustic propertis in the meV and sub-meV energy range as studied with inelastic x-ray scattering.

THUp.LIQ.29 16:30

Fluctuation theorems for an anharmonically bound Brownian particle — •Roberto R. Deza[1], Gonzalo G. Izús[1], and Horacio S. Wio[2] — [1]Universidad Nacional de Mar del Plata, Argentina — [2]Instituto de Física de Cantabria, Spain

We develop the Onsager-Machlup theory for a dragged particle in a heat reservoir, bound by an anharmonic potential (a time-dependent harmonic oscillator plus a logarithm) and derive several fluctuation theorems.

THUp.LIQ.30 16:30

Simulating the Langevin Dynamics of Hard Spheres — •Antonio Scala[1] and Thomas Voigtmann[2] — [1]Dipartimento di Fisica and INFM-CRS SMC, Univ. di Roma "La Sapienza", P.le Aldo Moro 2, 00185 Roma, Italy — [2]Scottish Universities Physics Alliance, School of Physics, The University of Edinburgh, JCMB King's Buildings, Edinburgh EH9 3JZ, U.K.

Starting from a splitting of the Kramers' operator and from a new image-method approximation of the two-body Green's function, we introduce and test two new algorithms for the simulation of the Langevin dynamics of hard-spheres.

THUp.LIQ.31 16:30

Transport coefficients preliminary evaluation in diverse materials during the glass transition — •Enrique Lemus-Fuentes — Universidad Tecnologica de la Mixteca, Huajuapan de Leon, Oax. Mexico

The energy landscapes are derived in terms of the frequency spectra. The entropy and the transport coefficients are evaluated with the distribution function of the inherent structures located on the energy landscape.

THUp.LIQ.32 16:30

Defect Nucleation and Defect Phase Formation in Solid Xe Induced by Synchrotron Radiation — •Alexander N. Ogurtsov, Natalia Yu. Masalitina, and Olga N. Bliznjuk — National Technical University "KhPI", Kharkov, 61002, Ukraine

Defect formation induced by exciton self-trapping was studied using the VUV luminescence method. The characteristic kinetic parameters of defect accumulation, nucleation and defect phase formation in solid Xe under synchrotron irradiation were obtained.

THUp.LIQ.33 16:30

Engineering the Spin Dynamics in Time-Dependent Spintronics — •Gianluca Stefanucci[1,2], Enrico Perfetto[2,3], and

Thursday

Michele Cini[1,2] — [1]Dipartimento di Fisica, Università di Roma "Tor Vergata", Via della Ricerca Scientifica 1, I-00133 Rome, Italy. — [2]Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali di Frascati, Via E. Fermi 40, 00044 Frascati, Italy. — [3]Dipartimento di Scienza dei Materiali, Università di Milano-Bicocca, Via Cozzi 53, 20125 Milano, Italy.

We study the time-dependent transport through quantum dots in presence of normal and ferromagnetic leads. The goal is to engineer the transient response in order to enhance spin polarized currents and spin accumulations.

THUp.LIQ.34 16:30

On the Theory of Charge, Spin and Current Dynamics in Multiply-Connected Nanoscopic Devices in Crossed Time-Dependent Fields — Stefano Bellucci[1], Chiara Ciccarelli[2], •Michele Cini[1,2], Paolo Onorato[3], Enrico Perfetto[1,4], and Gianluca Stefanucci[1,2] — [1]Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali di Frascati, Via E. Fermi 40, 00044 Frascati, Italy — [2]Dipartimento di Fisica, Università di Roma "Tor Vergata", Via della Ricerca Scientifica 1, I-00133 Rome, Italy. — [3]Dipartimento di Fisica "A. Volta", Università di Pavia, Via Bassi 6, I-27100 Pavia, Italy — [4]Dipartimento di Scienza dei Materiali, Università di Milano-Bicocca, Via Cozzi 53, 20125 Milano, Italy

We study the time-dependent transient current response of a nanoscopic ring connected to leads and threaded by a magnetic flux to an impulsive bias.

THUp.LIQ.35 16:30

Bose-Einstein Condensation and Thermodynamic Properties for Bosonic System with Repulsive Interaction Potential Model — •Mohamed Al-Sugheir, Shawkat Gasymeh, Abdel Khaleq Alsmadi, and Mohamed Bawa'aneh — Department of Physics, The Hashemite University, Zarqa, Jordan

The condensation fraction of bosonic system with potential model is studied within the static fluctuation approximation. The condensation fraction is found to decrease with increasing potential strength and/or core radius of the potential

THUp.LIQ.36 16:30

Lifetime of metastable states in the presence of multiplicative noise — •Pasquale Caldara[1], Angelo La Cognata[1], Bernardo Spagnolo[1], Alessandro Pluchino[2], and Andrea Rapisarda[2] — [1]Dipartimento di Fisica e Tecnologie Relative, Università di Palermo and CNISM-INFM, Unità di Palermo Group of Interdisciplinary Physics, Viale delle Scienze, I-90128 Palermo, Italy — [2]Dipartimento di Fisica e Astronomia and INFN, Università di Catania, Via S. Sofia 64 I-95123, Catania, Italy

We analyze a model system characterized by an asymmetric bistable potential in the presence of an additive and a multiplicative noise. The lifetime of a metastable state with different potential and initial conditions is analyzed.

THUp.LIQ.37 16:30

Pressure induced packing and interfacial dehydration on nonionic C12E6 micellar in aqueous solution — Fabio Sterpone[1], •Giuseppe Briganti[2], Simone Melchionna[2], and Carlo Pierleoni[3] — [1]Caspur, Rome, Italy — [2]INFN-CRS SOFT, Dep. Phys. University La Sapienza,IT-60131 Rome, Italy — [3]INFN-CRS SOFT, Dep. Phys. University L'Aquila, IT-60131, Italy

The effect of pressure, from 0.001 Kbar up to 3 Kbar, is investigated by molecular dynamic simulations on C12E6 spherical micelles. We observe core *freezing* and interfacial dehydration that we compare with experiments.

THUp.LIQ.38 16:30

A time dependent cosmological constant from a compressible anisotropic fluid — •Hristu Culetu and Hristu Culetu — Ovidius University, Constanta, Romania

The contribution has been withdrawn by the authors.

THUp.LIQ.39 16:30

Stochastic thickness and roughness of a biofilm — Elizabeth Salinas-Rodriguez[1], Rosalío Rodríguez Z[2], Juan Manuel Zamora M[1], and •Guadalupe Hernández M[3] — [1]Departamento I. P. H., Universidad Autónoma Metropolitana, Iztapalapa, México — [2]Departamento de Física Química, Instituto de Física, UNAM, México — [3]Departamento C. B. I., Universidad Autónoma Metropolitana, Azcapotzalco, México

We construct a stochastic model for the time evolution of a mono-species biofilms thickness and its fluctuations around the average thickness value is presented. Our predictions compare well with experimental results.

THUp.LIQ.40 16:30

Elastic properties and ultrasonic attenuation for the $Zr_{52.5}Ti_5Cu_{17.9}Ni_{14.6}Al_{10}$ bulk metallic glass under hydrostatic pressure up to 1 GPa — •Przemysław Witczak[1], Zbigniew Witczak[1], and Vitaly Khonik[2] — [1]Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, Poland — [2]Department of General Physics, State Pedagogical University, Voronezh, Russia

Elastic properties, equation of state and attenuation of longitudinal and transverse ultrasonic waves for $Zr_{52.5}Ti_5Cu_{17.9}Ni_{14.6}Al_{10}$ metallic glass was measured under pressure up to 1 GPa. Several times lower values of attenuation were obtained than expected.

THUp.LIQ.41 16:30

Dynamics of uniaxial hard ellipsoids: orientational glass transition driven by elongation — •Cristiano De Michele[1], Rolf Schilling[2], and Francesco Sciortino[1] — [1]Dipartimento di Fisica and INFM-CRS Soft, Università di Roma "La Sapienza", P.le Aldo Moro 2, 00185 Roma, Italy — [2]Johannes-Gutenberg-Universitat Mainz, D-55099 Mainz, Germany

We performed an extensive molecular dynamics study of the dynamics of uniaxial hard-ellipsoids, finding, for the first time, an indirect evidence of a pre-nematic order driven glass transition, as predicted by the molecular mode-coupling theory.

THUp.LIQ.42 16:30

Phase diagram, anomalous behavior and quasi-binary amorphous phase in a 3D system of particles with repulsive-shoulder interaction — •Valentin Ryzhov, Yury Fomin, and Nadezhda Gribova — Institute for High Pressure Physics, Russian Academy of Sciences, 142190, Troitsk, Moscow region, Russia

Phase behavior of the system with repulsive step potential is investigated. It is shown that the melting line of the system demonstrates maxima. The water-like anomalies are found near the minimum on the melting line.

THUp.LIQ.43 16:30

The interaction between charged macroions induced — •Klemen Bohinc[1,2], Ales Iglic[2], Jurij Rescic[3], and Stefano Maset[4] — [1]University College of Health Studies, University of Ljubljana, Slovenia — [2]Laboratory of Physics, Faculty of Electrical Engineering, — [3]Faculty of Chemistry and Chemical Technology, University of Ljubljana — [4]Department of Mathematics and Informatics, University of trieste

The interaction between like charged surfaces, separated by a solution of rod-like multivalent nanoparticles was studied theoretically and experimentally.

THUp.LIQ.44 16:30

Anharmonic contributions to the acustic damping in v-SiO2 — •Andrea Giugni[1,2], Paola Benassi[1,2], and Michele Nardone[1,3] — [1]Dipartimento di Fisica, Università di L'Aquila, IT-67100 Coppito, L*Aquila, Italy — [2]CRS SOFT-INFM-CNR, c/o Università di Roma La Sapienza, IT- 00185 Roma, Italy — [3]Consorzio Nazionale Interuniversitario per le Scienze fisiche della Materia - CNISM c\o Dipartimento di Fisica, Università di L* Aquila, IT-67100 Coppito, L'Aquila, Italy

Brillouin scattering sound attenuation measurements in v-Silica are reported. While around 150K absorption depends on OH concentration, at higher temperatures it is dominated by anharmonic phonon interactions also present in the crystalline counterpart.

THUp.LIQ.45 16:30

Pulsed Cathode Luminescence in Alkali Silicate Glasses — •Anatoliy Zatsepin[1], Valentina Guseva[2], and Dmitriy Zatsepin[3] — [1]Ural State Technical University, 620002, Ekaterinburg, Russia — [2]Research Institute of Physics and Applied Mathematics, Ural State University, Ekaterinburg, 620083, Russia — [3]Institute of Metal Physics, Ural Division, Russian Academy of Sciences, 620219, Ekaterinburg, Russia

The alkali silicate glasses has been investigated by means of pulsed cathode luminescence. Experimental bands (3.5 eV, 3.1 eV and 2,4-2,6 eV) belongs to L-centers and NBOHC interacting with the alkali ion

THUp.LIQ.46 16:30

The Mg-Ti-H System: an accident of nature — •Andrea Baldi, Robin Gremaud, Bernard Dam, and Ronald Griessen — Department of Physics and Astronomy, Vrije Univer-

siteit Amsterdam, De Boelelaan 1081, 1081 HV Amsterdam, The Netherlands

We demonstrate the presence of chemical short-range order in Mg-Ti-H thin films by combining EXAFS and theoretical modeling of the hydrogen absorption isotherms. The short-range order is responsible for the exceptional properties of these materials.

THUp.LIQ.47 16:30

Glass-forming clusters and self-organization effects in covalent-bonded glass formers — •Vitaliy Boyko[1], Malgorzata Hyla[2], and Yaroslav Shpotyuk[3] — [1]Lviv Sci.&Res. Institute of Materials of SRC Carat 202, Stryjska str. 79031,Lviv, Ukraine — [2]Institute of Physics of Jan Dlugosz University 13/15, al. Armii Krajowej, 42201,Czestochowa, Poland — [3]Ivan Franko National University of Lviv, 1, Universytetska str., Lviv, 79000, Ukraine

In present work it was described the matrix of As-Se chalcogenide glasses from energetically point of view. It was shown that corner-shared pyramids are more energetically favorable than edge-shared ones.

THUp.LIQ.48 16:30

Critical behavior of kinetic coefficients in confined liquid systems — Alexander Chalyi[1] and •Elena Zaitseva[2] — [1], O. O. Bogomolets National Medical University, Kiev, Ukraine — [2]Taras Shevchenko National University of Kiev, Kiev, Ukraine

Formulae for the susceptibility for different low-crossover dimensions were obtained. The influence of the geometrical size was investigated for all dimension values in the immediate vicinity of the critical point and in metastable region.

THUp.LIQ.49 16:30

"Sheet Formation Phenomena in Ferrofluid in Rotating Magnetic Field" — •Yuko Yamada[1] and Yoshihisa Enomoto[2] — [1]Chubu University, Kasugai, Aichi — [2]Nagoya Institute of Technology, Nagoya, Aichi

We carry a computer simulation of microstructure formation of ferrofluid. Especially considering the rotating field effect, and obtain layering structures in various ranges of the rotating frequency and packing density.

THUp.LIQ.50 16:30

Hypersound damping in vitreous silica by a picosecond optical technique — •Marie Foret[1], Arnaud Devos[2], Simon Ayrinhac[1], Patrick Emery[2], and Benoit Rufflé[1] — [1]University of Montpellier 2, F-34095 Montpellier, France — [2]Institut d'Electronique, de Microélectronique et de Nanotechnologies, F-59652 Villeneuve d'Asq, France

Despite considerable recent activity, high frequency sound attenuation in glasses remains a controversial issue. We report new measurements of the LA attenuation in vitreous silica in the crucial frequency region below 1THz using a picosecond optical technique.

THUp.LIQ.51 16:30

Shear thickening and glass transition in molecular solutions characterized by inverse melting — •Roberta Angelini — Research center SOFT INFM-CNR, University of Rome "La Sapienza"

Viscosity measurements on molecular solutions undergoing inverse melting show that under shear they exhibit shear thickening. This experimental result is interpreted on the basis of recent theories on shear thickening and jamming.

THUp.LIQ.52 16:30

Structural Relaxation in Glasses studied by Infrared Photon Correlation Spectroscopy — •Stefano Cazzato[1], Tullio Scopigno[1], Spyros N. Yannopoulos[2], and Giancarlo Ruocco[1] — [1]Dipartimento di Fisica and INFM, Università di Roma La Sapienza, I-00185 Roma, Italy. — [2]Foundation for Research and Technology Hellas, Institute of Chemical Engineering and High Temperature Chemical Processes, GR-26 504 Patras, Greece

Dynamic light-scattering with infrared radiation allowed us to investigate the slow dynamics of non transparent inorganic glass-formers. The structural relaxation dynamics of binary chalcogenide glasses belonging to the series As(x)Se(100-x) and As(x)S(100-x) has been studied.

THUp.LIQ.53 16:30

Critical behaviour of athermal mixtures in the presence of quenched disorder — •Pier Giorgio De Sanctis Lucentini[1] and Giuseppe Pellicane[2] — [1]Università di Roma La Sapienza, P.Le Aldo Moro 2, IT-00185 Roma, Italy — [2]niversità degli Studi di Messina, Dip. Fisica, IT-98166 Messina, Italy

The critical properties of a symmetrical, binary athermal mixture in a random matrix are investigated via Semi-grand ensemble Monte Carlo simulations.

Notes

Notes

Aula Magna

8:40 – 10:00

FRI1M: Surface, Interface and Low-Dimensional Physics - Electronic Properties and Surface Structure

Chair: S. Fabris, CNR-INFM Democritos and Scuola Internazionale Superiore di Studi Avanzati, Trieste, Italy

FRI1M.1 (Invited) 8:40

Dynamic Processes Observed by Scanning Tunnelling Microscopes: Conformation Changes, Diffusion and Vibrations — •Werner A. Hofer — The University of Liverpool, Surface Science Research Centre, Liverpool, United Kingdom

We show that the field-induced diffusion of adsorbates to the probe tip can change the magnetic resolution in the experiments by nearly one order of magnitude, and that the tip field will change the Kondo temperature of a single magnetic impurity in a continuous manner during its approach.

FRI1M.2 9:20

Controlling an atomic scale machine by Scanning Tunneling Microscope — •Amirmehdi Saedi, Arie van Houselt, Bene Poelsema, and Harold Zandvliet — Solid State Physics Group and MESA+ Institute for Nanotechnology, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands

Aula Amaldi

8:40 – 10:00

FRI1A: Semiconductor Physics - Quantum Optics

Chair: G. Bastard, LPA-ENS 24 Paris, France

FRI1A.1 (Invited) 8:40

Nano-photonic devices for quantum information technology — •Andrew Shields — Toshiba Research Europe, Cambridge, UK

I describe recent progress on using single quantum dots as quantum light sources, such as triggered emitters of single photons or entangled pairs. Entanglement fidelities exceeding 90% are demonstrated allowing violation of Bell's inequality.

FRI1A.2 9:20

Single-photon generation in superconducting nanocircuits via adiabatic passage — •Giuseppe Mangano[1,2], Jens Siewert[1,2], and Giuseppe Falci[1] — [1]Matis Cnr-Infm & Dipartimento di Metodologie Fisiche e Chimiche per l'Ingegneria (DMFCI), Università di Catania, I-95125 — [2]Institute für Theoretische Physik, Uni-

Aula Conversi

8:40 – 10:00

FRI1C: Joint Biological Physics & Life Sciences and Polymer Physics XI

Chair: D. Vlassopoulos, Institute of Electronic Structure and Laser, Heraklion, Crete, Greece

FRI1C.1 (Invited) 8:40

Laws Controlling Crystallization and Melting in Bulk Polymers — •Gert Strobl — Physikalisches Institut, Universitaet Freiburg, 79104 Freiburg, Germany

Experiments carried out during the last decade revealed several laws which control polymer crystallization and melting in bulk. The observations indicate that the pathway followed in the growth of polymer crystallites includes an intermediate mesomorphic phase.

FRI1C.2 9:20

Directing the Crystallisation of Polymers using Additives — •Geoffrey Mitchell[1], Fred Davis[1], Robert Olley[1], and Supatra Wangsoub[1,2] — [1]Polymer Science Centre, University of Reading, Whiteknights, Reading RG6 6AF UK — [2]Department of Chemistry, Naresuan University, Phitsanulok 65000 Thailand

Aula 1

8:40 – 10:00

Talks from Exhibitors

Chair: J. Cinquetti, Cinquepascal srl, Milano, Italy

8:40

The European Physical Journal (EPJ): Genesis and modern developments — •Christian Caron — Springer - Verlag, Berlin, Germany

A brief overview of The European Physical Journal (EPJ), co-published by the Italian and French Physical Societies, and Springer, as joint initiative to develop and expand a leading international physics journal out of Europe. More specifically, the aims, scope and Editorial Policy of The European Physical Journal B - Condensed Matter and Complex Systems, are presented.

8:50

Springer - Your Physics Publisher — •Maria Bellantone — Springer - Verlag, Berlin, Germany

Introduction to our publishing company including: brief history, mission statement. Followed by an overview of our Physics publications, our print and online services for Physics readers and authors, our key contact persons. Then highlighting some specific Physics products and showing their features.

9:00

EPL (the new branding of Europhysics Letters) and Journal of Physics Condensed Matter (an overview) — •Philip Semple — IOP Publishing, Bristol, UK

9:10

EPL (the new branding of Europhysics Letters) and Journal of Physics Condensed Matter (an overview) — •Graeme Watt — IOP Publishing, Bristol, UK

9:20

Oxford Instruments Nanoscience evelopping the next generation of cryogen-free superconducting magnet and ultra-low-temperature equipment. — •Andrea Catalfamo — Oxford Instruments Nanoscience, Oxfordshire, UK

Friday

Aula 3

8:40 – 10:00

FRI1F3: Magnetism - Magneto Electronics Materials I

Chair: M. Ausloos, SUPRATECS, Liège, Belgium

FRI1F3.1 (Invited) 8:40

Coupling between magnetic and dielectric properties in insulating transiton metal oxides. — •Antoine Maignan, Natalia Bellido, Bohdan Kundys, Christine Martin, and Charles Simon — Laboratoire CRISMAT, CNRS/ENSICAEN, 6 boulevard du Maréchal Juin, 14050 Caen cedex 4 - FRANCE

Strong spin/charge/lattice coupling in transition metal oxides is at the origin of magnetocapacitance effects. This will be illustrated by several examples: cobaltites with triangular magnetism, and a bismuth ferrite with magnetic field induced ferroelectricity.

FRI1F3.2 9:20

Stability conditions of the cluster spin glass states in the spinels CuCr2X4 (where X=S, Se) doped by the Sb ions — •Józef Krok-Kowalski, Jerzy Warczewski, Paweł Gusin, Grzegorz Urban, Grzegorz Władarz, and Paweł Rduch — University of Silesia, Institute of Physics, ul. Uniwersytecka 4, PL-40-007 Ka-

Aula 4

8:40 – 10:00

FRI1F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity and Quantum Criticality I

Chair: M. D'Astuto, Université Pierre et Marie Curie, Paris, France

FRI1F4.1 (Invited) 8:40

Magnetic excitations measured by high resolution L_3 edge RIXS in cuprates and in NiO — •Giacomo Ghiringhelli — Politecnico di Milano, Italy

For the first time we have studied the k-space dispersion of magnetic excitations in cuprate thin films and in NiO using high resolution resonant inelastic x-ray scattering at the L_3 resonance of Cu and Ni.

FRI1F4.2 9:20

Spectroscopic evidence of quantum critical charge and spin fluctuations in cuprates — •Tilman Enss[1], Sergio Caprara[2], Carlo Di Castro[2], and Marco Grilli[2] — [1]Physik Department T34, Technische Universität München, Garching, Germany — [2]SMC–INFM and Dipartimento di Fisica, Università di Roma "Sapienza",

Aula 6

8:40 – 10:00

FRI1F6: Physics of Socio-Economic and Complex Systems - Self-Organization in Socio-Economic Systems

Chair: J. Reichardt, University of Würzburg, Würzburg, Germany

FRI1F6.1 (Invited) 8:40

Social networks and their modeling — •Janos Kertesz and Et Al. — Institute of Physics, Budapest University of Technology and Economics

Phone records are used to construct a proxy for the network of interactions at societal level. A simple model based on sociology theory demonstrates the importance of the weights in the formation of communities.

FRI1F6.2 9:20

Multifractal interevent time statistics in socio-economic systems: The financial trading case — •Josep Perelló[1], Jaume Masoliver[1], Andrzej Kasprzak[2], and Ryszard Kutner[2] — [1]Departament de Física Fonamental, Universitat de Barcelona, Spain — [2]Faculty of Physics, Warsaw University, Poland

Aula Magna

A new atomic configuration has been found on a Pt modified Ge(001) surface by STM which acts similar to a pinball machine consisting of a pair of dimers functioning as its flippers.

FRI1M.3 9:40

What Can we Learn from Antimatter at the Surface? — •Christoph Hugenschmidt, Jakob Mayer, Philip Pikart, Martin Stadlbauer, and Klaus Schreckenbach — Physics Department E 21 and FRMII, Technical University Munich, 85747 Garching, Germany

Matter-antimatter annihilation of positrons trapped at surfaces or interfaces lead to a completely different access to elemental selective information. Experiments on layered Al/Sn-samples and on metallic surfaces were performed using a high-intensity positron beam.

10:00 – 10:30: Coffee Break

10:30 – 11:50

FRI2M: Surface, Interface and Low-Dimensional Physics - Electronic Properties IV

Chair: A. Ciszewski, University of Wroclaw, Wroclaw, Poland

FRI2M.1 10:30

Intra-atomic charge re-organization at the Pb-Si interface: bonding mechanism at low coverage — •Martin Švec[1], Viktor Dudr[1], Pingo Mutombo[1], Kevin Prince[2], and Vladimír Cháb[1] — [1]Institute of Physics, Academy of Science of the Czech Republic, Cukrovarnická 10, 162 53, Prague, Czech Republic — [2]Sincrotrone Trieste, Strada Statale 14, km 163.5, 34012 Basovizza-Trieste, Italy

For the beta- and gamma-Pb/Si(111)–($\sqrt{3} \times \sqrt{3}$)R30° surfaces, we performed photoemission diffraction experiments and extensive DFT calculations, which clarify the bonding of atoms to the substrate and related electronic/structural effects.

Aula Amaldi

verstität Regensburg, D-93040 Regensburg, Germany

The contribution has been withdrawn by the authors.

FRI1A.3 9:40

Photon interference from noisy solid-state devices — •Ahsan Nazir[1,2] and Sean Barrett[3] — [1]Department of Physics and Astronomy, University College London, Gower Street, London WC1E 6BT, U. K. — [2]Centre for Quantum Dynamics and Centre for Quantum Computer Technology, Griffith University, Brisbane, Queensland 4111, Australia — [3]Blackett Laboratory, Imperial College London, Prince Consort Road, London SW7 2BW, U. K.

We study the effects of dephasing environments on a pair of solid-state single photon sources, finding that they induce a loss of indistinguishability in the photon emission that can be rectified by post-selection.

10:00 – 10:30: Coffee Break

10:30 – 11:50

FRI2A: Semiconductor Physics - Low Dimensional Systems

Chair: A. Polimeni, Università La Sapienza, Roma, Italy

FRI2A.1 10:30

Transition from diffusive to localized in 2D random laser — •Patrick Sebbah and Christian Vanneste — CNRS, Nice, France

We explore the transition from extended to localized modes in random optical media with increasing scattering contrast by introducing gain and pumping the first lasing mode. A possible scenario for the transition is proposed.

Aula Conversi

We show the effective direction of the crystallisation of polymers using additives coupled with modest flow and that the alignment of the crystals can be switched from parallel to normal by changing the additive composition.

FRI1C.3 9:40

Langevin Dynamics of the Early Crystallization Stages of a Single-Chain Polyethylene Model Containing Main Chain Defects — •Javier Martinez-Salazar and Javier Ramos — Instituto de Estructura de la Materia, Serrano 113bis, 28006 Madrid, Spain

We present Langevin dynamics simulations of polyethylene models concerning the molecular mechanisms involved in the formation of ordered structures during the early stages of crystallization from an amorphous random coil to a folded structure

10:00 – 10:30: Coffee Break

10:30 – 11:50

FRI2C: Joint Biological Physics & Life Sciences and Polymer Physics XII

Chair: S. Scheuring, Institut Curie, Paris, France

FRI2C.1 (Invited) 10:30

Biophysical mechanisms of CLC chloride channels and transporters — •Michael Pusch — Istituto di Biofisica, Genova, Italy

CLC proteins are a fascinating example of how a very similar protein architecture can be used to provide either a passive electrodiffusive permeation pathway or a strictly coupled secondary active ion transporter.

Aula 1

9:30

Royal Society Publishing – 350 years of excellence in science — •Suzanne Abbott — Royal Society Publishing, London, UK

9:40

1.7 K Advanced 3 Stage Closed Cycle Cryostat — •Marco Portaluppi — Cinquepascal Srl, Milano, Italy

9:50

Nanoprecise Positioning in Extreme Environments — •Andrea Rauh — Attocube Systems AG, Muenchen, Germany

10:00 – 10:30: Coffee Break

10:30 – 11:50

FRI1F: Surface, Interface and Low-Dimensional Physics - Nanowires, Nanoparticles

Chair: W.A. Hofer, The University of Liverpool, Liverpool, UK

FRI1F.1 10:30

Control of the morphology, organization and optical response of silver nanoparticles by using capping-layer effects and nanostructured surfaces — •David Lantiat, David Babonneau, Sophie Camelio, Lionel Simonot, Frédéric Pailloux, and Marie-Françoise Denanot — Laboratoire de Physique des Matériaux, UMR CNRS 6630, Futuroscope, France

Our work is focused on the study of the influence of capping-layer effects and nanostructured surfaces on the structural and optical properties of silver nanoparticles.

Friday

Aula 3

towice, Poland

Analysis based on de Almeida-Thouless theory. The temperature range of this stability was determined as function of antimony concentration. A finite but very low external magnetic field to keep this stability has been found.

FRI1F3.3 9:40

Unconventional antiferromagnetism and magnetoresistance in lightly-doped La_2CuO_4 — •Lara Benfatto[1,2] and Marcello Silva Neto[3] — [1]Centro Studi e Ricerche "Enrico Fermi", via Panisperna 89/A, I-00184, Rome, Italy — [2]University of Rome "La Sapienza", P.le Aldo Moro 5, I-00185, Rome, Italy — [3]Institut fur Theoretische Physik, Universitat Stuttgart, Pfaffenwaldring 57, D-70550, Stuttgart, Germany

Taking into account the role of Dzyaloshinskii-Moriya interactions we can explain the spin reorientation and magnetoresistance observed at finite magnetic field in lightly-doped Ls2CuO4

10:00 – 10:30: Coffee Break

10:30 – 11:50

FRI2F3: Magnetism - Magneto Electronics Materials II

Chair: A. Maignan, CNRS/ENSICAEN, Caen, France

FRI2F3.1 10:30

Magnetic stability and exchange mechanism of semiconducting and metallic local moment systems — •Wolfgang Nolting, Sören Henning, Jochen Kienert, Niko Sandschneider, and Martin Stier — Institut für Physik, Humboldt-Universität, Newtonstr. 15, 12489 Berlin

The Kondo-lattice model is used to describe the influence of moment disorder on magnetic stability in dilute ferromagnetic semiconductors, spin-polarized tunnel currents through insulating ferromagnetic films, and interlayer exchange coupling in local moment multilayer systems.

Aula 4

Roma, Italy

We discuss to what extent nearly quantum-critical charge and spin collective excitations at a finite wavevector can account for the doping and temperature dependence of both optical and Raman spectra in cuprates.

FRI1F4.3 9:40

Fermi surface and van Hove singularities in the itinerant metamagnet $Sr_3Ru_2O_7$ — •Anna Tamai[1], Milan P. Allan[1], Jean-Francois Mercure[1], Robin S. Perry[1], Andrew P. Mackenzie[1], David J. Singh[2], Z.-X. Shen[3], and Felix Baumberger[1] — [1]School of Physics and Astronomy, University of St Andrews, North Haugh, St. Andrews, KY16 9SS, UK — [2]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6114, USA — [3]Department of Applied Physics and Stanford Synchrotron Radiation Laboratory, Stanford University, Stanford, California 94305, USA

The complete Fermi surface of $Sr_3Ru_2O_7$ has been determined by high-resolution angle-resolved photoemission. The data give clear evidence for van Hove singularities in the quasiparticle density of states on the natural energy scale of metamagnetism.

10:00 – 10:30: Coffee Break

10:30 – 11:50

FRI2F4: Superconductivity and Highly-Correlated Systems - High Tc Superconductivity and Quantum Criticality II

Chair: M. Grilli, Università La Sapienza, Roma, Italy

FRI2F4.1 10:30

Charge-density-wave features of tunnel conductances for junctions involving high-T_c oxides — Toshikazu Ekino[1], •Alexander M. Gabovich[2], Mai Suan Li[3], Marek Pekala[4], Henryk Szymczak[3], and Alexander I. Voitenko[2] — [1]Faculty of Integrated Arts and Sciences, Hiroshima University, Higashi-Hiroshima, 739-8521, Japan — [2]Institute of Physics, Nauka Avenue 46, Kyiv 03680, Ukraine — [3]Institute of Physics, Lotników Avenue 32/46, PL-02-668 Warsaw, Poland — [4]Department of Chemistry, University of Warsaw, Żwirki i Wigury Avenue 101, PL-02-089 Warsaw, Poland

Tunnel current-voltage characteristics (TCVC)

Aula 6

The interevent statistics observed in social and economic contexts differs from a Poissonian profile. Our general formalism describes q-moments of the pausing time through a superstatistics aiming to quantify heterogeneous intertransaction times in financial markets.

FRI1F6.3 9:40

Josephson Junctions as a Prototype for Synchronization of Nonlinear Oscillators: from the Kuramoto Model to the Utility Power Grid System — •Giovanni Filatrella[1], Niels F. Pedersen[2], and Arne H. Nielsen[2] — [1]CNR-INFM SuperMat Salerno and Dep. of Biological and Environmental Sciences, Univ. Sannio, Via Port'Arsa 11, I-82100 Benevento, Italy — [2]Oersted-DTU, Section of Electric Power Engineering, The Technical University of Denmark, DK-2800 Lyngby, Denmark

The analysis of synchronzation of Josephson junctions has led to a modification of the Kuramoto model. The features embodied are generic and shared by other systems, such as the utility power grid.

10:00 – 10:30: Coffee Break

10:30 – 11:50

FRI2F6: Physics of Socio-Economic and Complex Systems - Dynamics of Socio-Economic Systems

Chair: J. Perello, Universitat de Barcelona, Barcelona, Spain

FRI2F6.1 (Invited) 10:30

Statistical physics approach to language games — •Andrea Baronchelli — Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Campus Nord B4, 08034 Barcelona, Spain.

I present some simple multi-agent models, of increasing complexity, able to account for the emergence of a shared set of (linguistic) conventions in a population of individuals. I analyze them with numerical and analytical approaches.

FRI2M.2 10:50

Commensurable resistance oscillations in the ballistic transport of electrons on cylindrical surfaces — •Klaus-Juergen Friedland, Rudolf Hey, Helmar Kostial, and Angela Riedel — Paul-Drude-Institut fuer Festkoerperelektronik, Hausvogteiplatz 5*7, 10117 Berlin, Germany

We observe resistance oscillations in the ballistic transport of electrons on cylindrical surfaces which periodicity depends on the square-root of the magnetic field. We relate these oscillations to snake-like orbits for tangentially oriented magnetic fields.

FRI2M.3 11:10

New Lights on Correlations in High T_c Superconductors: the First Application of Gutzwiller Approximation to Auger Transitions — Simona Ugenti[1,2], Michele Cini[1,2], •Josè Lorenzana[3], Goetz Seibold[4], Enrico Perfetto[2,5], and Gianluca Stefanucci[1,2] — [1]Dipartimento di Fisica, Università di Roma "Tor Vergata", Via della Ricerca Scientifica 1, I-00133 Rome, Italy. — [2]Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali di Frascati, Via E. Fermi 40, 00044 Frascati, Italy. — [3]SMC-INFM, ISC-CNR, Dipartimento di Fisica, Università di Roma "La Sapienza", P. Aldo Moro 2, I-00185 Rome, Italy. — [4]Institut für Physik, BTU Cottbus, P.O. Box 101344, 03013 Cottbus, Germany. — [5]Dipartimento di Scienza dei Materiali, Università di Milano-Bicocca, Via Cozzi 53, 20125 Milano, Italy.

In this work we show the first application of the recently developed Time Dependent Gutzwiller's Approximation to the computation of the dynamical two particle response function describing Core-Valence-Valence Auger transitions from CuO_2 planes.

FRI2A.2 10:50

Formation of self-assembled quantum dots using ultra low growth rate for telecommunication applications at 1.3 and 1.5 μm — •Christian Seidel, Roland Enzmann, Daniela Baierl, Christian Jendrysik, Ralf Meyer, Jonathan Finley, and Markus-Christian Amann — Walter Schottky Institute, Garching, Germany

We report on the formation of InAs quantum dots on InP lattice-matched AlGaInAs grown by solid-source-MBE using ultra low growth rates. Adjusting the bandgap of the matrix the wavelength of 1.3 and 1.5 μm was accessable.

FRI2A.3 11:10

Surface compositional profiles of In(Ga)As quantum rings on GaAs(001) — •Stefan Heun[1], Giorgio Biasiol[2], Rita Magri[3], Andrea Locatelli[4], Tevfik Onur Mentes[4], and Lucia Sorba[1] — [1]NEST INFM-CNR and Scuola Normale Superiore, I-56126 Pisa, Italy — [2]Laboratorio Nazionale TASC INFM-CNR, AREA Science Park, I-34012 Trieste, Italy — [3]S3 INFM-CNR and Università di Modena e Reggio Emilia, I-41100 Modena, Italy — [4]Sincrotrone Trieste S.C.p.A., I-34012 Trieste, Italy

Composition maps of In(Ga)As/GaAs quantum rings obtained by XPEEM reveal a non-uniform profile with In-rich core. VFF calculations predict a preference for In to remain in the ring center, in agreement with the experimental findings.

FRI2C.2 11:10

A stochastic approach to transport in potassium ion channels — •Enrique Abad[1,2], John J. Kozak[3], Phillip Fowler[1], and Mark S. P. Sansom[1] — [1]Structural Bioinformatics and Computational Biochemistry Unit, Department of Biochemistry, University of Oxford, South Parks Road, Oxford OX1 3QU, United Kingdom — [2]Centre for Nonlinear Phenomena and Complex Systems,Universite Libre de Bruxelles, Campus Plaine, C.P. 231, B-1050 Brussels, Belgium — [3]DePaul University, 243 South Wabash Avenue, Chicago IL 60604-231, USA

Our stochastic model shows that under physiological conditions transport rates in a potassium channel approach the limit of freely diffusing uncharged particles, thereby providing quantitative support for a recent hypothesis by MacKinnon et al.

FRI1F.2 10:50

Interaction of a CO molecule with a Pt monoatomic wire: electronic structure and ballistic conductance — •Gabriele Sclauzero[1,2], Andrea Dal Corso[1,2], Alexander Smogunov[2,3,4], and Erio Tosatti[1,2,3] — [1]International School for Advanced Studies (SISSA-ISAS), Trieste, Italy — [2]CNR-INFM Democritos National Simulation Center, Trieste, Italy — [3]International Centre for Theoretical Physics (ICTP), Trieste, Italy — [4]Voronezh State University, Voronezh, Russia

We investigate from first principles the adsorption of CO on Pt monoatomic nanowires. We discuss electronic structure and ballistic conductance of different adsorption geometries and address the effects of spin-orbit coupling.

FRI1F.3 11:10

Doping and co-doping in Silicon Nanowires — Federico Iori[1], •Maurizia Palummo[2], and Stefano Ossicini[3] — [1]Laboratoire des Solides Irradies, Ecole Polytechnique - CEA, Palaiseau, France — [2]ETSF, Univ. Tor Vergata, Dip. Fisica Via della Ricerca Scientifica I, Roma — [3]Dip. di Scienze e Metodi dell'Ingegneria, Università di Modena e Reggio Emilia

Through DFT calculations, we studied the stability of the doped and co-doped Si-nws (with Boron and Phosphorous impurities). Band structures calculations and optical properties have been also calculated including, in come cases, many-body effects.

Aula 3

FRI2F3.2 10:50

Antiparallel magnetic coupling across a ferromagnet-diluted magnetic semiconductor interface: Fe/GaMnAs — •Francesco Maccherozzi[1], Matthias Sperl[2], Christian Back[2], Giancarlo Panaccione[3], Giorgio Rossi[3], and Werner Weghscheider[2] — [1]Soleil Synchrotron, L'Orme des Merisiers, Saint Aubin 91192, France — [2]Institut fur Experimentelle Physik,Univ. Regensburg, D-93040 Regensburg, Germany — [3]Laboratorio Nazionale TASC, INFM-CNR, in Area Science Park, S.S. 14, Km 163.5, I-34012, Trieste, Italy

We will show an XMCD/XAS study proving the existence of an antiparallel magnetic coupling across the Fe/(GaMn)As interface, extending up to and above room temperature.

FRI2F3.3 11:10

Manganite La0.67Sr0.33MnO3 (LSMO) studied by first principles calculations — •Giuseppe Colizzi, Alessio Filippetti, Fabrizio Cossu, and Vincenzo Fiorentini — SLACS-INFM-CNR, Sardinian LAboratory for Computational Material Physics

First-principles calculations have been performed for La0.67Sr0.33MnO3. A strong competition of AF phases vs. FM was found under compression and JT distortions favour it. Thus under compression double exchange (DE) weakens not strengthens

Aula 4

were calculated for junctions involving inhomogeneous superconductors with charge density waves. TCVC reveal dip-hump structures at low temperatures, T, and pseudogap features at higher T. Results agree with TCVC for cuprates.

FRI2F4.2 10:50

Synthesis and characterization of $RuSr_2RECu_2O_8$ superconductor: rare earth substitutions (RE = Gd, Eu, Nd, Pr) and Ru content effects on the physical properties and phase equilibria — •Eugenio Casini[1], Manuel Kempf[1], Johannes Kraemer[1], Hans F. Braun[1], Consiglia Tedesco[2], Antonio Vecchione[2], and Thomas P Papageorgiou[3] — [1]Physikalisches Institut, Universität Bayreuth, D-95440 Bayreuth, Germany — [2]Università di Salerno and Laboratorio Regionale CNR-INFM "SuperMat", via S. Allende, I-84081 Baronissi (Salerno), Italy — [3]Hochfeld-Magnetlabor Dresden, Forschungzentrum Dresden-Rossendorf, D-01314 Dresden, Germany

Synthesis of Ru1212RE with RE=Gd-Eu, Nd-Pr is discussed. The volatilization of Ru–oxides at high temperature and in oxygen atmosphere in the Ru1212Gd synthesis is a known problem. With CVT-process we affected the Ru content in RuGd1212.

FRI2F4.3 11:10

Magnetic and charge excitations in electron-doped cuprates — •Ilya Eremin[1,2], Jan-Peter Ismer[1,2], Dirk K. Morr[3], and Andrey Chubukov[4] — [1]Max-Planck-Institut fuer Physik komplexer Systeme, D-01187 Dresden, Germany — [2]Institute fuer Mathematische und Theoretische Physik, TU-Braunschweig, D-38106 Braunschweig, Germany — [3]Department of Physics, University of Illinois at Chicago, Chicago, Illinois 60607, USA — [4]Department of Physics, University of Wisconsin, Madison, WI 53706, USA

We analyze the asymmetry of the magnetic and charge excitations in the superconducting electron- and hole-doped cuprates. We also study the stability of the d-wave superconductivity in the regime of the density wave states.

Aula 6

FRI2F6.2 11:10

External Field Influences in the Emergence of Consensus or Extremism in the CODA Model — •André C. R. Martins — GRIFE-EACH - Universidade de São Paulo

We explore the effects of introducing external fields in the Continuous Opinions and Discrete Actions (CODA) model and present the consequences of those fields for the emergence of consensus or extremism in the system.

Aula Magna

FRI2M.4 11:30

Origin of the decoherence in the Integer Quantum Hall Regime — •Preden Roulleau[1], Fabien Portier[1], Antonela Cavanna[2], Giancarlo Faini[2], Ulf Gennser[2], Dominique Mailly[2], and Patrice Roche[1] — [1]CEA Saclay , Service de Physique de l'Etat Condense, Nanoelectronic group, F-91191 Gif-sur-Yvette, France — [2]CNRS, Laboratoire de Photonique et Nanostructures, Phynano team, Route de Nozay, F-91460 Marcoussis, France

An electronic Mach Zehnder interferometer is used in the IQHE regime at filling factor 2, to study the dephasing of the interferences.

12:00 – 12:45

FRIPL: Plenary 4

Chair: Carlo Mariani, University La Sapienza, Roma, Italy

FRIPL.1 (Plenary) 12:00

Organic molecules on surfaces: insights from first principles simulations — •Annabella Selloni — Chemistry Dept., Princeton University

This talk gives an overview of first principles studies of the structural and electronic properties of organic / inorganic interfaces, with focus on thiol- and amine-terminated alkane chains between metal surfaces, and chromophores on TiO2(110).

12:45 – 13:15: Prize + Closing

Aula Amaldi

FRI2A.4 11:30

Suppression of nonlinear losses in oligophenyl nanofiber films under laser action — •Francesco Quochi[1], Michele Saba[1], Fabrizio Cordella[1], Agnieszka Gocalinska[1], Riccardo Corpino[1], Marco Marceddu[1], Alberto Anedda[1], Andrey Andreev[2], Helmut Sitter[3], Niyazi Serdar Sariciftci[4], Andrea Mura[1], and Giovanni Bongiovanni[1] — [1]Dipartimento di Fisica, Università di Cagliari, I-09042 Monserrato (CA), Italy — [2]Institute of Physics, University Leoben, A-8700 Leoben, Austria — [3]Institute for Semiconductor and Solid State Physics, University Linz, A-4040 Linz, Austria — [4]Linz Institute for Organic Solar Cells (LIOS), Physical Chemistry

We investigate laser action in self-assembled oligophenyl nanofibers under optical excitation. At cryogenic temperatures, we demonstrate suppression of nonlinear losses and two orders of magnitude improvement in lasing thresholds with nanosecond pulsed excitation.

Aula Conversi

FRI2C.3 11:30

Steady-State Chemotactic Response in E. coli — •Yariv Kafri — Technion, Haifa, Israel

E. coli maneuvers to high chemoattractant concentrations by performing 'runs', and 'tumbles'. We account for temporal correlations and variable tumbling durations. A range of behaviors obtains, that depends subtly upon several aspects of the system.

Aula 1

FRI1F.4 11:30

Quantum confinment effects on the electronic and optical properties of Ge nanocrystals — •Margherita Marsili[1,2], Silvana Botti[1,3], Hansi Ch.- Weissker[1,3], Olivia Pulci[1,2], Rodolfo Del Sole[1,2], Manuela Scarselli[2], Paola Castrucci[2], Maurizio De Crescenzi[2], Juergen Furthmueller[1,4], Stefano Ossicini[5], and Maurizia Palummo[1,2] — [1]European Theoretical Spectroscopy Facility (ETSF) — [2]INFM, NAST and Dipartimento di Fisica dell' Università di Roma Tor Vergata, I-00133 Roma, Italy — [3]Laboratoire des Solides Irradiés, CNRS-CEA, Ecole Polytechnique, Palaiseau, France — [4]IFTO, Friedrich Schiller Universität, Jena, Germany — [5]CNR-INFM-S3 and Dipartimento di Scienze e Metodi dell'Ingegneria, Universitá di Modena e Reggio Emilia, I-42100 Reggio Emilia, Italy

We study, within many-body-perturbation theory, the electronic and optical properties of different Ge nanocrystals. We compare the results to recent experimental data concerning the electronic gap and the photocurrent spectra of Ge nanocrystals.

Aula 3

FRI2F3.4 11:30

Exchange atomic displacements in rare-earth hexaborides — •Mehdi Amara and Rose-Marie Galera — Institut Neel, CNRS/ UJF, 25 avenue des Martyrs, BP 166, 38042, Grenoble, France

In some crystallographic systems, atomic displacements develop at a low energy cost. As the system orders magnetically, they collectively act to further decrease the interaction energy, with drastic consequences on the magnetic properties.

Aula 4

FRI2F4.4 11:30

Strongly correlated superconductivity arising in a pseudogap metal — •Marco Schirò[1], Massimo Capone[2,3], Michele Fabrizio[1,4], and Claudio Castellani[2] — [1]International School for Advanced Studies (SISSA), and CRS Democritos, CNR-INFM, Via Beirut 2-4, I-34014 Trieste, Italy — [2]SMC, CNR-INFM, and Università di Roma La Sapienza, Piazzale Aldo Moro 2, I-00185 Roma, Italy — [3]Istituto dei Sistemi Complessi, CNR, Via dei Taurini 19, I-00185 Roma, Italy — [4]The Abdus Salam International Centre for Theoretical Physics (ICTP), P.O.Box 586, I-34014 Trieste, Italy

We solve by Dynamical Mean Field Theory a toy-model whose phase diagram recalls the physics of high-Tc cuprates and we introduce an ansatz to model the superconducting phase we find out of a pseudogap metal.

Aula 6

FRI2F6.3 11:30

The Future Poverty Hiding in Cities — •Dimitry Volchenkov — Universitaet Bielefeld, Fakultaet fuer Physik, Mathematische Physik, Universitaetsstrasse 25, D-33615 Bielefeld, Germany

Expected urban population doubling calls for a compelling theory of the city. Random walks and diffusions defined on spatial city graphs spot hidden areas of geographical isolation in the urban landscape going downhill.

Abad, Enrique ..... •FRI2C.2
Abdikarimov, Bakhytkhan THUp.LIQ.5
Abe, Masayuk WED2M.4
Abi Akl, Maya THUp.SUR.45
Abstreiter, Gerhard TUEp.SEMI.22, THU2A.2
Accard, A TUEp.SEMI.71
Achilli, Simona THUp.SUR.44
Acremann, Yves TUE3F3.1
Adamenko, Igor THUp.LIQ.18, THUp.LIQ.27
Adamenko, Igor N. TUE3F6.3
Adiguzel, Osman . •TUEp.MAT.28
Adriaens, Annemie .... •TUE3F1.1
Aflori, Magda THUp.LIQ.2
Agostinelli, Elisabetta . MON2F3.4, TUEp.MAG.30
Agostino, Angelo ... THUp.SUP.21
Agrawal, Himanshu •THUp.BIO.17
Ahmed, Waqqar .. •TUEp.SUR.28
Airinei, Anton THUp.SUR.19, THUp.POL.25
Åkerman, Johan TUE2F3.2, TUEp.MAG.36
Al., Et FRI1F6.1
Alagia, Michele TUEp.SUR.58
Alam, Maqsudul MON2C.2
Alavi, Ali THUp.SUR.36
Albertini, Franca ..... •WED1F3.2
Albrecht, Manfred THU2M.4
Albuquerque, Eudenilson TUEp.SEMI.48, TUEp.MAG.22
Alekhin, Alexander .. THUp.LIQ.5, THUp.LIQ.14, •THUp.LIQ.15
Alekssev, Pavel THUp.SUR.42
Alemany, Manuel .. TUEp.MAG.32
Alessandrini, Andrea .. •TUE3C.3, THUp.BIO.18
Alexandr, Vasiliev .. TUEp.MAG.20
Alexeenko, Alexandr TUEp.SUR.10, THUp.SUR.22
Alfi, Valentina ..... •THU1F6.2
Alippi, Adriano THUp.BIO.15
Alippi, Paola ..... MON2M.5, WED1F3.3, •TUE2F1.3, TUEp.MAT.21
Allan, Milan P. FRI1F4.3
Almeida, Abílio ... TUEp.MAT.12, •TUEp.MAT.25
AlShaikhi, Abdullah A. •TUEp.MAT.2
Alsmadi, Abdel Khaleq THUp.LIQ.35
Al-Sugheir, Mohamed •THUp.LIQ.35
Altimiras, Carles ..... •WED1A.3
Altukhov, Igor TUEp.SEMI.63
Amado, Mario .... TUEp.SEMI.51, •TUEp.SEMI.55, •TUEp.SEMI.60, •TUEp.SEMI.61, •TUEp.SEMI.65, •TUEp.SEMI.68
Amann, Markus-Christian FRI2A.2
Amara, Mehdi ..... •FRI2F3.4
Amarande, Luminita TUEp.MAT.27
Amaricci, Adriano .... •MON2F4.5
Amat, Pietro THU2C.3
Ambacher, Oliver THU3A.2, THUp.SUR.31
Ambrosch-Draxl, Claudia TUEp.MAT.10
Amore Bonapasta, Aldo TUEp.SEMI.33, •MON2M.5, WED1F3.3
Anastasiadis, Pavlos THUp.BIO.15
Andersen, Ole Krogh ... TUE2F4.1
Andrade, Lourdes .. TUEp.MAT.12
Andreasen, Jens W. TUEp.SUR.13
Andreev, Andrey FRI2A.4
Andrei, Petru THU2F3.1
Andreone, Domenico THUp.SUP.22
Andrews, J Thomas TUEp.SEMI.28
Anedda, Alberto FRI2A.4
Anfossi, Alberto ... •THUp.SUP.15
Angela, Stefan TUEp.SEMI.4
Angelini, Roberta ..... TUE1F6.2, •THUp.LIQ.51
Angelucci, Renato ... THUp.SUR.9
Anitas, Eugen Mircea .. MON1F3.3
Antonioli, Gianni TUEp.CUL.5
Antonova, Irina ... •TUEp.SUR.63, THUp.SUR.42
Antsygina, Tatiana .. TUEp.SUR.9, •TUEp.MAG.2, THUp.SUP.4, TUE1F1.3
Apetrii, Gabriela THU2A.2
Appel, Heiko THU2A.3
Aquilanti, Giuliana ... THUp.LIQ.3
Arakaki, Aroldo MON1A.2
Araujo, Carlos TUEp.MAG.22
Araujo, Joao Pedro . TUEp.MAG.1, TUEp.MAT.12
Arikan, M. Cetin .. TUEp.SEMI.42
Arosio, Paolo .... •TUEp.MAG.16, THUp.BIO.12
Artoni, Maurizio .. TUEp.SEMI.12, THU3A.3
Asatryan, Anna TUEp.SUR.29
Ascenzi, Paolo MON2C.2
Aschenbrenner, Timo THUp.SUR.29
Aseyev, Sergei .... •TUEp.SUR.62
Asín, Laura MON1F3.1
Aslan, Metin TUEp.SEMI.42
Aspect, Alain TUE3F6.4
Asulin, Itay THU2F4.2
Atlasov, Kirill TUE1A.1
Attaccalite, Claudio ... •THU1F1.2
Attolini, Giovanni . •TUEp.SUR.38, •TUEp.MAG.9, TUEp.MAT.4
Auffret, Stéphane .. TUEp.MAG.17
Augello, Giuseppe . •THUp.SUP.18
Aureau, Damien .. •THUp.SUR.20
Ausloos, Marcel ..... •MON2F3.5
Auvray, Loic THUp.POL.16
Averkiev, Nikita TUE2A.2
Avetisyan, Artak .. •TUEp.SEMI.6, TUEp.SEMI.31
Avotina, Yevgeniya . •THUp.SUR.8
Avram, Calin ..... •TUEp.MAT.32
Avram, Nicolae TUEp.MAT.32
Ayrinhac, Simon THUp.LIQ.50
Ayriyan, Alexandr ... THUp.SUP.3
Azuma, Masaki THU1F4.2
Babonneau, David FRI1F.1
Bachmann, Magdalena •WED2M.3
Back, Christian FRI2F3.2
Badalyan, Samvel ..... •THU2A.4
Bafile, Ubaldo ..... •THUp.LIQ.10
Baganov, Yevgen . •THUp.SUR.25
Baglioni, Pierro ..... •TUE3F1.2
Baierl, Daniela FRI2A.2
Bailey, Nicholas WED1F6.1
Balan, Adrian TUEp.SEMI.57
Balashov, Timofey ... •WED2F3.1
Balasoiu, Maria ..... •MON1F3.3, TUEp.MAG.25
Balberg, Isaac TUEp.SUR.63
Baldassarre, Leonetta THUp.SUP.12
Baldi, Andrea ..... •THUp.LIQ.46
Balitska, Valentina . •THUp.LIQ.25
Bansmann, Joachim ... THU2F3.2
Barbarani, Vito .... •THUp.SUP.6
Barbieri, Stefano WED2A.1
Bardin, Lisa MON1M.3
Baro, Maria Dolors TUEp.MAG.12, TUEp.MAG.13
Barocchi, Fabrizio ... THUp.LIQ.10
Baronchelli, Andrea .... •FRI2F6.1
Barone, Paolo .... •THUp.SUP.14
Barrett, Sean FRI1A.3
Bartolini, Paolo WED2F6.4
Bartoloni, Leonardo THUp.SUP.26
Barvik, Ivan THUp.BIO.20
Baschnagel, Jörg ..... •MON1C.1
Bassani, Enrico THUp.SUP.21
Bastard, Gerald ..... •MON2A.4
Bator, Grazyna ... •TUEp.MAT.3, TUEp.MAT.5, WED2F1.3
Batrakov, Konstantin TUEp.SUR.35
Bauer, Günther TUE1A.4, THU3A.4
Baumberger, Felix FRI1F4.3
Bawa'aneh, Mohamed THUp.LIQ.35
Bazhan, Alexander •TUEp.MAG.4, •TUEp.MAG.10
Beaugnon, Eric THU3F3.5
Becker, Conrad TUEp.SUR.17, TUEp.SUR.19, WED2M.2
Bednorz, Mateusz TUEp.SEMI.37, THU3A.4
Beenken, Wichard J. D. •TUEp.SEMI.64
Beere, Harvey TUEp.SEMI.66, WED2A.2, WED2A.3
Belkhou, Rachid ... TUEp.MAG.37
Bellani, Vittorio .. TUEp.SEMI.55, TUEp.SEMI.61
Belletti, Francesco MON1F6.2
Bellido, Natalia FRI1F3.1
Bellini, Tommaso THU3C.2
Bellini, Valerio TUE3F3.3
Bellorín, Alberto ... TUEp.MAG.29
Bellucci, Stefano ... THUp.SUR.5, •THUp.SUP.9, THUp.LIQ.34, •THUp.POL.13
Beloussov, Igor TUEp.SEMI.58
Beltram, F THU1A.2
Beltram, Fabio TUE2A.1, TUEp.SEMI.66, WED2A.2, THUp.SUP.26, THU2C.3
Belt'yukov, Anatoliy •THUp.LIQ.22
Belyakov, Ludvig ... THUp.SUR.27
Belzig, Wolfgang .. TUEp.SEMI.56
Benassi, Paola THUp.LIQ.44
Benedetti, Stefania ... •WED1M.2
Benfatto, Lara ..... •FRI1F3.3, •THU2F4.3
Benjamin, Simon WED1A.4
Benoit, Corazze TUE2F4.2
benyahia, karima ... THUp.SUR.15
Berezina, Sofia THUp.BIO.15
Berezovets, Vyacheslav TUEp.SEMI.45
Bernard, Alain TUE3F6.4
Berndt, Büchner ... TUEp.MAG.20
Bersani, Danilo TUEp.CUL.5
Bertel, Erminald ..... WED2M.3, •THU1M.1
Bertelli, Marco TUE2M.2
Berti, Marina TUEp.SEMI.33
Bertin, Denis THU2C.2
Bertonati, Claudia WED1C.3
Bertoni, Andrea ..... THU1A.3, •TUEp.SUR.52, •THU3F1.4
Bertoni, C M ..... •TUE2M.2
Bertoni, Carlo Maria •THUp.SUR.11, WED1F3.5
Bertoni, Giovanni ..... •TUE1F3.2
Berzina, Tatiana THUp.BIO.7
Bettè, Sara THUp.BIO.12
Betti, Maria Grazia MON2M.3, THUp.SUR.44
Bettinelli, Marco THU1F3.1
Bettucci, Andrea ... THUp.BIO.15
Biagi, Roberto TUE3M.4
Bianchi, Alberto ... TUEp.MAG.16
Bianchino, Gloria TUEp.CUL.5
Biasiol, G THU1A.2
Biasiol, Giorgio TUE1A.1, TUE2A.1, TUEp.SEMI.55, TUEp.SEMI.61, TUEp.SEMI.66, FRI2A.3
Bica, Ioan MON1F3.3
Billy, Juliette TUE3F6.4
Bimberg, Dieter ..... •MON2A.1, TUEp.SEMI.24
Binder, Kurt THUp.POL.10
Binggeli, Nadia TUEp.SEMI.35
Birchenko, Alexandr . THUp.LIQ.11
Birjega, Ruxandra .. THUp.SUR.30
Biroli, Giulio WED1F6.3
Bismayer, Ulrich TUE2F1.2, TUEp.MAT.16
Bisognin, Gabriele . TUEp.SEMI.33
Bivona, Saverio THU3F6.2
Bizzarri, Ranieri THU2C.3
Blackmond, Donna THU3M.1
Blaha, Peter TUEp.MAT.10
Blanco, Juan Mari .. TUEp.MAG.6
Bliznjuk, Olga N. ... THUp.LIQ.32
Blonskyy, Ivan ... •TUEp.SEMI.15, TUEp.SEMI.16, THUp.SUR.22
Blümer, Nils ..... •THU3F4.1
Bobeth, Manfred ... TUEp.SUR.41
Bocchi, Claudio WED1F3.2
Boccia, Alice ..... •TUEp.SUR.58
Bohinc, Klemen ... •THUp.LIQ.43
Böker, Alexander ... THUp.POL.28
Bolhuis, Peter G. ... THUp.POL.24
Bolognesi, Martino .... •MON2C.2
Bolzoni, Fulvio TUEp.MAG.9, WED1F3.2
Bonacci, Enzo .... •THUp.SUP.20
Bonanno, Giovanni ... •THU3F6.2
Bonetti, Stefano ..... TUE2F3.2, •TUEp.MAG.36
Bonferroni, Benedetta THUp.SUR.23
Bongiovanni, Giovanni TUEp.SEMI.44, FRI2A.4
Bordi, Federico TUE2C.2, THUp.BIO.9, THUp.BIO.19
Borghetti, Patrizia . •THUp.BIO.14
Born, Detlef TUE3F4.4, THUp.SUP.26
Borsa, Ferdinando . TUEp.MAG.16
Boscherini, Federico TUEp.SEMI.33
Boscolo, Ilario THUp.SUR.9
Bosi, Matteo TUEp.SUR.38, TUEp.MAT.4
Botti, Silvana FRI1F.4
Bouchaud, Jean-Philippe WED1F6.3
Bouchiat, Hélène WED1A.2
boué, françois ..... TUEp.MAG.15, •THU2C.2
Bougeard, Dominique TUEp.SEMI.22
Boulle, Olivier WED2F3.2
Bourgeois, Lydie TUE1F1.2
Bourges, Philippe TUE1F1.2
Bouyer, Philippe TUE3F6.4
Bouzerar, Georges .... •MON2F3.2
Boyko, Vitaliy ..... •THUp.LIQ.47
Bradley, Louise TUEp.SEMI.46
Branco, José Roberto TUEp.SEMI.43
Braun, Hans F. FRI2F4.2
Breczewski, Tomasz TUE1F1.2
Breiby, Dag W. TUEp.SUR.13
Breinlich, Christian •TUEp.SUR.17
Brener, Sergey THU3F4.2
Briganti, Giuseppe •THUp.LIQ.37, THUp.POL.19, •WED1C.3
Briggs, G. Andrew D. .. THU1F1.1
Brik, Mikhail TUEp.MAT.32
Broekmann, Peter THU3M.2
Brombacher, Christoph . THU2M.4
Brosens, Fons TUEp.SEMI.23
Brown, April THU3A.2
Brucas, Rimantas WED1M.4
Bruno, Flavio WED2F3.3
Bruno, Giovanni THU3A.2
Brydon, Philip THU1F3.3
Bryszewska, Maria ... THUp.BIO.5
Bryushinin, Mikhail THUp.POL.18
Buchholz, Sven S. THU2A.2
Buga, Sergei TUEp.MAG.18
Bulavin, Leonid WED2F6.3, THUp.LIQ.14
Buldyrev, Sergey .. •THUp.LIQ.17
Bulusheva, Lyubov G. TUEp.MAT.17
Bulut, Furkan THU2F3.2
Bunzarov, Zhelyu TUEp.SUR.7
Burchianti, Alessia •THUp.SUR.13
Burlon, Riccardo THU3F6.2
Buron, Marylise TUEp.MAG.5
Buscaglia, Marco ..... •THU3C.2
Bussetti, Gianlorenzo .. •TUE2M.1
Bussmann-Holder, Annette WED1F1.3
Bussolotti, Fabio ... THUp.SUR.44
Bustamante, Carlos TUE3C.4
Butenko, Pavel TUEp.SUR.33
Bychkov, Yuri TUEp.SUR.20
C, Chacon WED2M.1
C, Goyhenex WED2M.1
Cabassi, Riccardo WED1F3.2
Cadelano, Emiliano •TUEp.SEMI.34
Cagin, Tahir TUEp.SUR.37
Cailleau, Hervé TUEp.MAG.5
Calabrese, Antonio ... •MON2M.3
Calandra, Matteo THU1F4.2
Calcagnile, Lucio ... THUp.SUR.14
Caldara, Pasquale . •THUp.LIQ.36
Caldas, Marilia J. .. THUp.SUR.23
Calzolari, Arrigo MON2M.2, TUE3M.3, THU3M.3, THUp.SUR.23
Camelio, Sophie FRI1F.1
Cametti, Cesare TUE2C.2, THUp.BIO.9, THUp.BIO.19
Campani, Elisa TUEp.CUL.5
Campbell, Eleanor .. TUEp.SUR.39
Cancellieri, Emiliano ... THU3F1.3
Canepa, Maurizio MON1M.2, TUE3M.4
Cantoro, Mirco THU1F1.3
Capizzi, Mario TUEp.SEMI.33, THU3A.2
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