

**FisMat  
2017**



ICTP - SISSA Miramare Campus - Trieste - October 1-5, 2017 - Conference Chairs: Ezio Puppin (CNISM) - Corrado Spinella (CNR) - Stefano Ruffo (SISSA)

**Italian National Conference on  
the Physics of Matter including the  
SILS and SISN conferences**

*Trieste, October 1 - 5, 2017*

Conference Chairs:

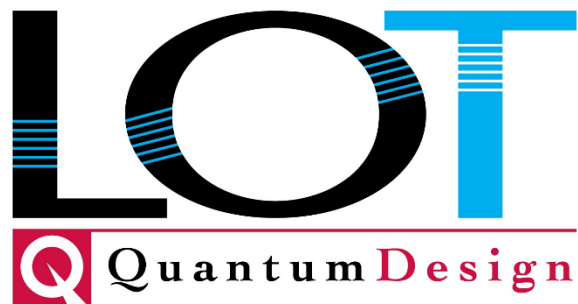
Ezio Puppin (CNISM)

Corrado Spinella (DSFTM - CNR)

Stefano Ruffo (SISSA)

**CONFERENCE PROGRAM**

**SPRINGER NATURE**



## **Scientific Committe**

(Chair) Massimo Capone (SISSA)

Laura Ballerini (SISSA)  
Riccardo Bertacco (PoliMI)  
Federico Boscherini (UniBO)  
Raffaella Burioni (UniPR)  
Carlo Carbone (CNR-ISM)  
Pietro Carretta (UniPV)  
Loredana Casalis (Elettra)  
Francesco Cataliotti (LENS)  
Giovanni Comelli (UniTS)  
Rosario Fazio (ICTP, SNS)  
Giacomo Ghiringhelli (PoliMI)  
Paolo Giannozzi (UniUD)  
Silvano Lizzit (Elettra)  
Claudio Masciovecchio (Elettra)  
Cristian Micheletti (SISSA)  
Alberto Morgante (CNR-IOM, UniTS)  
Fulvio Parmigiani (UniTS)  
Francesco Priolo (UniCT)  
Giorgio Sberveglieri (UniBS)  
Lucia Sorba (CNR-NANO)  
Sandro Sorella (SISSA)  
Nicola Spinelli (UniNA)  
Pierluigi Veltri (Unical)  
Emanuela Zaccarelli (CNR-ISC)  
Scientific Secretariat

## **Steering committee**

Massimo Capone, Antonella Tajani, Ezio Puppini, Rosario Fazio, Giacomo Ghiringhelli, Lucia Sorba, Corrado Spinella, Stefano Ruffo

## **Organizing local committee**

(Chair) Loredana Casalis (Elettra)

Cristina Africh (CNR-IOM), Carlo Callegari (Elettra), Cinzia Cepek (CNR-IOM), Ali Hassanali (ICTP), Daniele Fausti (UniTS), Andrea Goldoni (Elettra), Nicola Seriani (ICTP), Alessandro Silva (SISSA)

|               | Sunday 01                       | Monday 02                       | Tuesday 03                      | Wednesday 04                    | Thursday 05                                 | Friday 06                                |
|---------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---|--|
| 09:00 - 09:30 |                                 | Francesco Sciortino             | Giulia Galli                    | Andrew Millis                   | Robert Feidenhans'l                         | Prosecution of SILS and SISN conferences |
| 09:30 - 10:00 |                                 | Coffee break                    | Coffee break                    | Coffee break                    | Coffee break                                |  |
| 10:00 - 10:30 |                                 | Parallel sessions               | Parallel sessions               | Parallel sessions               | Parallel sessions (including SILS and SISN) |  |
| 10:30 - 11:00 |                                 |                                 |                                 |                                 |   |  |
| 11:00 - 11:30 |                                 |                                 |                                 |                                 |   |  |
| 11:30 - 12:00 |                                 |                                 |                                 |                                 |   |  |
| 12:00 - 12:30 |                                 |                                 |                                 |                                 |   |  |
| 12:30 - 13:00 |                                 |                                 |                                 |                                 |   |  |
| 13:00 - 13:30 | Registration                    | Lunch                           | Lunch                           | Lunch                           | Lunch                                       |  |
| 13:30 - 14:00 | Opening                         |                                 |                                 |                                 |   |  |
| 14:00 - 14:30 |                                 |                                 |                                 |                                 |   |  |
| 14:30 - 15:00 | Latha Venkataraman              |                                 |                                 |                                 |   |  |
| 15:00 - 15:30 |                                 |                                 |                                 |                                 |   |  |
| 15:30 - 16:00 | Coffee break and poster session | Parallel sessions               | Parallel sessions               | Round table                     | Parallel sessions (including SILS and SISN) |  |
| 16:00 - 16:30 |                                 |                                 |                                 |                                 |   |  |
| 16:30 - 17:00 |                                 |                                 |                                 |                                 |   |  |
| 17:00 - 17:30 |                                 | Coffee break and poster session | Coffee break and poster session | Coffee break and poster session | Mark Johnson                                |  |
| 17:30 - 18:00 | Parallel sessions               | Albert Fert                     | Laurens Molenkamp               | Marc Mezard                     | Alberto Diaspro                             |  |
| 18:00 - 18:30 |                                 |                                 |                                 |                                 |   |  |
| 18:30 - 19:00 |                                 |                                 |                                 |                                 |   |  |
| 19:00 - 19:30 | Viola Vogel                     |                                 |                                 | Andrei Varlamov                 | Good bye party                              |  |
| 19:30 - 20:00 |                                 |                                 |                                 |                                 |   |  |
| 20:00 - 20:30 | Welcome party                   |                                 | Social dinner                   |                                 |   |  |
| 20:30 - 21:00 |                                 |                                 |                                 |                                 |   |  |



## Conference rooms location

Budinich Lecture Hall  
Euler

Leonardo building (1)  
Leonardo building (1)

SISSA D  
SISSA A  
SISSA B  
SISSA lecture hall

Former SISSA building (2)  
Former SISSA building (2)  
Former SISSA building (2)  
Former SISSA building (2)

Kastler  
Infolab

Adriatico guesthouse (6)  
Adriatico guesthouse (6)

# Plenary sessions

All the plenary sessions will take place in the Budinich Lecture Hall  
located in the Leonardo building

## Sunday, October 1

14:30-15:30 **Latha Venkataraman** Columbia University (USA)  
*Electron Transport in Single-Molecule Circuits*

19:00-20:00 **Viola Vogel** ETH Zurich (Switzerland)  
*Fighting bacterial infections: the nanomechanics of a  
macrophage attack*

## Monday, October 2

09:00-10:00 **Francesco Sciortino** Università La Sapienza (Italy)  
*Unconventional collective behaviour of DNA – made  
nanoparticles*

18:00-19:00 **Albert Fert** Université Paris – Sud (France)  
*From topology to devices: magnetic skyrmions, topological  
Materials and applications*

## Tuesday, October 3

09:00-10:00 **Giulia Galli** University of Chicago (USA)  
*Materials discovery and scientific design by computation:  
what does it take?*

18:00-19:00 **Laurens Molenkamp** Universitaet Wuerzburg (Germany)  
*Topological Physics in HgTe - based Quantum Devices*

## Wednesday, October 4

- 09:00-10:00 **Andrew Millis** Columbia University (USA)  
*Meeting Dirac's Challenge: solution of the Correlated Electron Problem*
- 18:00-19:00 **Marc Mezard** Ecole normale supérieure (France)  
*Information theory, data science and the curse of phase transitions*
- 18:00-19:00 **Andrey Varlamov** SPIN – CNR (Italy)  
*Alex Abrikosov: the outstanding representative of the Landau school*

## Thursday, October 5

- 09:00-10:00 **Robert Feidenhans'l** European XFEL (Germany)  
*New opportunities at the European XFEL*
- 17:00-18:00 **Mark Johnson** ILL (France)  
*Italy and the ILL: two decades of successful collaborations*
- 18:00-19:00 **Alberto Diaspro** University of Genova – IIT (Italy)  
*Liquid Tuneable Microscopy*

**Sunday, October 1**

**16:30 - 19:00**

**Orals**

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***Nanostructures and Nanotechnologies I***

Chairman: Lucia Sorba

Room

Budinich

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|                               |   |
|-------------------------------|---|
| Ilaria Zardo                  | (Inv) <i>Nanophononics: phonon engineering and manipulation</i>   |
| Sergio D'Addato               | <i>Physical synthesis of metal@oxide, core@shell nanoparticles: two case studies</i>                                |
| Jacopo Stefano<br>Pelli Cresi | <i>Contraction and size effects in cerium oxide nanoparticles</i>   |
| Alberto Milani                | <i>Carbon-atom wires with sp<sup>2</sup> conjugated end groups: tuning the semiconductor-to-metal transition</i>    |
| Francesco Basso<br>Basset     | <i>Droplet epitaxy GaAs nanostructures as ideal entangled photon sources for hybrid quantum networking</i>          |
| Silvia Rubini                 | <i>Te doping of GaAs nanowires grown by MBE: an efficient pathway toward the fabrication of single-wire devices</i> |
| Marcello Righetto             | <i>Spectroscopic Insights into Carbon Dots Systems</i>  |
| Carmine Antonio<br>Perroni    | <i>Thermoelectric efficiency of molecular junctions</i>   |
| Morone Antonio                | <i>Laser Deposition of Magnetic Nanoparticles</i>   |

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***Biomedicine and Biophysics I***

Chairman: Silvia Onesti

Room

Euler

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|                   |  |
|-------------------|--|
| Giovanni Dietler  | (Inv) <i>Nanomotion Detection of Cells and Bacteria</i>  |
| Espedito Vassallo | <i>Bactericidal activity of nanopatterned surfaces by plasma process</i>   |
| Pietro Parisse    | <i>Biophysical analysis of extracellular vesicles</i>  |
| Francesco D'Amico | <i>A complete UV Resonant Raman scattering characterization of deoxycytidine triphosphate: towards the best experimental conditions to detect DNA cytosine methylation</i> |
| Paolo Zucchiatti  | <i>Collective Enhanced IR-SR Absorption (SR-CEIRA) microscopy for conformational studies of protein of biomedical interest</i>   |



|                   |  |
|-------------------|--|
| Stefano Bettati   | <i>STRUCTURAL CHARACTERIZATION OF CYSTEINE SYNTHASE ENZYMATIC COMPLEX BY PROTEIN PAINTING AND SAXS</i> |
| Nicola Galvanetto | <i>Unfolding proteins from neuronal membranes</i>  |
| Caterina Ricci    | <i>Hsp60: a study of stability and structure to understand its function and potentialities</i>         |
| Fabrizio Bardelli | <i>Combined phase-contrast and fluorescence tomography on asbestos bodies in human lungs</i>           |

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## ***Photonics and Quantum Information I***

Chairman: Elisabetta Paladino                          Room                          SISSA D

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|                     |   |
|---------------------|---|
| Massimo Palma       | (Inv) <i>Collision models of open quantum systems</i>   |
| Elisabetta Paladino | (Inv) <i>Quantum control of noisy hybrid quantum networks</i>   |
| Sandro Wimberger    | <i>Classical synchronization indicates persistent entanglement in isolated quantum systems</i>  |
| David Vitali        | <i>Enhancement of optomechanical interactions by feedback-controlled light</i>  |
| Francesco Tacchino  | <i>Autonomous quantum machine for steady state entanglement generation via bath engineering</i>   |
| Costanza Toninelli  | <i>Quantum technologies with photostable molecule on-chip</i>   |
| Alberto Ghirri      | <i>Coherently coupling molecular spins to microwave photons: first steps towards integration of molecular spin qubits into superconducting circuits</i> |
| Rosario Lo Franco   | <i>Utilizable entanglement from indistinguishable particles</i>   |

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## ***Matter in Extreme and metastable conditions***

Chairman: Sandro Sorella                          Room                          SISSA A

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|                    |  |
|--------------------|--|
| Mikhail Erements   | (Inv) <i>Conductive and possibly metallic hydrogen at pressures above 350 GPa and temperatures below 200 K</i>                               |
| Carlo Pierleoni    | <i>Coupled Electron-Ion Monte Carlo study of hydrogen under extreme conditions</i>   |
| Francesco Capitani | <i>Infrared Spectroscopy of H3S</i>  |
| Boby Joseph        | <i>Coexistence of pressure-induced structural phases in bulk black phosphorus: a combined x-ray diffraction and Raman study up to 18 GPa</i> |

|                   |  |
|-------------------|--|
| Guglielmo Mazzola | <i>Quantum simulations of the hydrogen-helium mixture metallization at Jupiter interior conditions</i> |
| Lorenzo Ulivi     | <i>Properties of ice XVII, a newly discovered metastable form of ice</i>                               |
| Mauro Palumbo     | <i>A theoretical investigation of the transition in tin</i>  |

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## ***Photonics for health***

|                         |  |         |
|-------------------------|--|---------|
| Chairman: Andrea Farina | Room   | SISSA B |
| Paola Taroni            | (Inv) <i>Time domain diffuse optical spectroscopy of tissue composition for in vivo clinical diagnostics</i>           |         |
| Giovanni Romano         | <i>Ingestible capsule for minimally-invasive intragastric photodynamic therapy against Helicobacter pylori</i>         |         |
| Antonella Battisti      | <i>Investigation of Helicobacter pylori endogenous porphyrins as photosensitizers for intragastric PDT</i>             |         |
| Anurag Behera           | <i>Study of optimal measurement conditions for time-gated diffuse optics systems</i>                                   |         |
| Davide Janner           | <i>Resorbable glass capillaries for combined light delivery</i>  |         |
| Pranav Lanka            | <i>Understanding the effect of inter-subject variability and layer geometry on the assessment of brain oxygenation</i> |         |
| Antonino Parisi         | <i>A Novel Advanced Pattern Recognition Pipeline for Photoplethysmography (PPG) measurements</i>                       |         |

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## ***Fluids and Soft Matter I***

|                            |  |         |
|----------------------------|--|---------|
| Chairman: Veronique Trappe | Room   | Kastler |
| Primoz Zihnerl             | (Inv) <i>Bronze-mean hexagonal quasicrystal</i>  |         |
| Emanuele Locatelli         | <i>Condensation and Demixing in solutions of DNA Nanostars and their Mixtures</i>  |         |
| Valentina Nigro            | <i>Unconventional Behaviour of Soft Multi-Responsive Microgels</i>   |         |
| Lorenzo Rovigatti          | <i>Towards a realistic description of computer-generated nano- and microgels: assembly protocol, form factors, density profiles and swelling curves of single soft particles</i> |         |
| Barbara Rossi              | <i>Investigation of the structural and molecular response in pH- sensitive hydrogels by the joint use of UV and neutron scattering techniques</i>                                |         |
| Tatjana Skrbic             | <i>Is Funneled Landscape of Proteins really explicitly sequence-dependent?</i>   |         |

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|--------------------|---|
| Federico Fadda     | <i>Switching dynamics in cholesteric liquid crystal emulsions</i>         |
| Stefano Bellissima | <i>The mark of hydrogen-bond interactions in liquid methanol dynamics</i> |
| Michela Ronti      | <i>Low-Temperature Branched Structures of Dipolar Hard Spheres</i>        |

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## ***Plasma Physics I***

| Chairman:        | Pierluigi Veltri   | Room | Infolab |
|------------------|--|------|---------|
| Vincenzo Carbone | (Inv) <i>Space Weather events in space plasmas</i>   |      |         |
| Marco Velli      | (Inv) <i>The plasma physics of solar activity and the origins of the Heliosphere: Parker Solar Probe and Solar Orbiter.</i>              |      |         |
| Gaetano Zimbardo | <i>A fractional Fick's law for anomalous transport in turbulent plasmas</i>  |      |         |
| Olga De Pascale  | <i>New reliable approaches for iron meteorites identification by laser induced plasma spectroscopy (LIPS)</i>                            |      |         |
| Tommaso Alberti  | <i>Looking at the solar wind plasma for Space Weather purposes</i>   |      |         |
| Iole Armenise    | <i>Vibrational kinetics of air species in space vehicle re-entry: the <math>O + N_2(v)</math> and <math>N + O_2(v)</math> collisions</i> |      |         |
| Elisa De Giorgio | <i>Study of Coherent Structure Formation in 2D Magnetohydrodynamics Turbulence</i>   |      |         |
| Oreste Pezzi     | <i>Collisional effects in Weakly Collisional Plasmas</i>   |      |         |

**Monday, October 2**

**11:00 - 13:30**

**Orals**

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***Nanostructures and Nanotechnologies II***

Chairman: Joost Wintterlin

Room

Budinich

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|--------------------|--|
| Erik Vesselli      | (Inv) <i>Towards zero-dimensional model catalysts: atomic-level insight into structure and stability at near-ambient pressure.</i>                             |
| Mario Rocca        | <i>Adatom Extraction from Pristine Metal Terraces by Dissociative Oxygen Adsorption: Combined STM and Density Functional Theory Investigation of O/Ag(110)</i> |
| Rossella Aversa    | <i>Automatic classification of nanoscience SEM images</i>  |
| Luca Bignardi      | <i>Key Role of Rotated Domains in Oxygen Intercalation at Graphene on Ni(111)</i>  |
| Paolo Giannozzi    | <i>Core level shifts in Mg surfaces exposed to water and oxygen</i>  |
| Lorenzo Gigli      | <i>Frictional features in graphene nanoribbons deposited on gold</i>   |
| Andrea Gnisci      | <i>Copper preoxidation effect on initial growth stages and individual graphene domains using ethanol precursor in chemical vapor deposition</i>                |
| Giuliana Aquilanti | <i>In-situ Structural Study of the Synthesis of ZnO Nanoparticles and the Adsorption process of Thiol Ligands</i>  |

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***Biomedicine and Biophysics II***

Chairman: Rossana Rauti

Room

Euler

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|                   |   |
|-------------------|---|
| Michele Giugliano | (Inv) <i>Curley et al. Draft: January 9th20141 / 26Polyethyleneimine coating improves nanocrystalline diamond surface properties as a neuronal adhesion substrate</i> |
| Denis Scaini      | <i>Tuning cell excitability via carbon-based nanomaterial</i>   |
| Lorenzo Massimi   | <i>Multiscale X-Ray Phase Contrast Tomography investigation of animal model of multiple sclerosis: monitoring diseases and treatment efficacy</i>                     |
| Michela Fratini   | <i>3D quantitative investigation of the spinal cord neuronal arrangements for preclinical application using X-ray Phase-Contrast multiscale-Tomography</i>            |
| Alessia Cedola    | <i>High resolution X-ray Phase Contrast Tomography applied to the investigation of Alzheimer disease</i>  |
| Mario Bortolozzi  | <i>A mimetic peptide restores connexin 32 hemichannel gating inhibited by the R220X mutation that causes Charcot-Marie-Tooth disease.</i>                             |

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|-------------------|---|
| Simone Capaccioli | <i>Vibrational dynamics of biomolecules embedded in glassy matrices</i>   |
| Igor Bodrenko     | <i>Sensing single molecule penetration into nanopores: pushing the time resolution to the diffusion limit</i>   |
| Mattia Musto      | <i>Generating microvesicles from astrocytes with unconventional stimuli to challenge this intercellular communication system in cultured cortex cells</i> |

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## ***Photonics and Quantum Information II***

|                           |  |         |
|---------------------------|--|---------|
| Chairman: Fabio Sciarrino | Room   | SISSA D |
| Fabio Sciarrino           | (Inv) <i>Boson sampling with integrated photonics</i>  |         |
| Paolo Villorosi           | (Inv) <i>Quantum Communications in Space: fundamental tests and applications</i>                                     |         |
| Milena D'Angelo           | <i>Plenoptic imaging at the diffraction limit</i>  |         |
| Maria Bondani             | <i>Exploring the quantum properties of mesoscopic optical states with photon-number-resolving detectors</i>          |         |
| Andrea Crespi             | <i>Observing quantum interference in three-dimensional multi-mode interferometers</i>                                |         |
| Augusto Smerzi            | <i>Witnessing entanglement with the Fisher information: from metrology to topological quantum phase transitions.</i> |         |
| Matteo Menotti            | <i>Generation of path-encoded GHZ states</i>   |         |
| Matteo Schiavon           | <i>Three-observer Bell inequality violation on a two-qubit entangled state</i>                                       |         |

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## ***Computational Methods I***

|                           |  |         |
|---------------------------|--|---------|
| Chairman: Carlo Pierleoni | Room   | SISSA A |
| Philippe Corboz           | (Inv) <i>Stripe order in the 2D Hubbard model</i>  |         |
| Dario Alfe                | (Inv) <i>Fast and accurate quantum Monte Carlo methods for material science</i>  |         |
| Seiji Yunoki              | <i>Quantum criticality in the metal-insulator transition of two-dimensional interacting Dirac fermions</i>                         |         |
| Michele Casula            | <i>Fully Quantum Description of Water Clusters: Combining Variational Quantum Monte Carlo with Path Integral Langevin Dynamics</i> |         |
| Luca Fausto Tocchio       | <i>Hidden Mott transition and large-U superconductivity in the two-dimensional Hubbard model</i>                                   |         |
| Serena Fazzini            | <i>Nonlocal Parity Order in the Two-Dimensional Mott Insulator</i>   |         |

Andrea Zen *Fast and accurate quantum Monte Carlo for molecular crystals*  
Aldo Glielmo *Machine learning many body expansions for potential energy surfaces*

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## ***Complex Networks and Inference***

Chairman: Raffaella Burioni Room SISSA B

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Matteo Marsili (Inv) *How simple are simple spin models?*  
Ginestra Bianconi (Inv) *Emergent hyperbolic geometry of growing simplicial complexes*  
Luca Leuzzi (Inv) *Statistical Inference in Non-linearly Interacting Wave Systems*  
Cosimo Lupo *Continuous variables on sparse graphs: a boost toward replica symmetry breaking*  
Fabio Franchini *Spontaneous Ergodicity Breaking in Invariant Matrix Models*  
Giacomo Gori *Long to short range crossover: the case of one-dimensional percolation*  
Gianluigi Serianni *Mechanisms behind generation and acceleration of negative ions as an example of complex network*

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## ***Fluids and Soft Matter II***

Chairman: Emanuela Zaccarelli Room Kastler

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Veronique Trappe (Inv) *Interplay of coarsening, aging and stress hardening impacting the creep behavior of a colloidal gel*  
Javier Fernandez-Castanon *Percolation threshold in the gelation process of DNA self-assembled structures*  
Letizia Tavagnacco *Dynamic transition in PNIPAM microgels at low temperatures*  
Simona Sennato *Multivariable reentrant condensation of microgel-polyelectrolyte complexes*  
Elena Minina *Magnetic microgels in computer simulations*  
Jose Ruiz-Franco *Crystallization of star polymers under shear flow*  
Barbara Capone *Designing building blocks at the molecular level*  
Eleonora Guarini *A new approach to the density of states of a liquid gives insight into its collective dynamics*  
Cettina Bottari *Hydration properties of native and modified cyclodextrin: an UV Raman and Brillouin scattering study*

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## ***Plasma Physics II***

Chairman: Vincenzo Carbone

Room

Infolab

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|                     |  |
|---------------------|--|
| Vanni Antoni        | (Inv) <i>Generation and acceleration of negative ions in neutral beam injectors for fusion research: status, perspectives and interdisciplinarity</i>                      |
| Francesco Pegoraro  | (Inv) <i>From oceanography to plasma physics: Lagrangian coherent structures</i>   |
| Paolo Scarin        | <i>Edge plasma perturbations in toroidal magnetic confinement devices</i>  |
| Roberto Paccagnella | <i>Relaxation models for single helical reversed field pinch plasmas at low aspect ratio</i>   |
| Fabio Sattin        | <i>Diffusive and evolutionary dynamics from the Master Equation</i>  |
| Massimo Nocente     | <i>Unraveling the energy distribution of MeV range ions in tokamak plasmas by a combination of multiple nuclear diagnostics and weight functions in the velocity space</i> |
| Lionello Marrelli   | <i>Upgrades of the RFX-mod experiment</i>  |
| Francesco Taccogna  | <i>Physics of streamer discharge</i>   |

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## ***Spintronics, ferroelectrics and multiferroics***

Chairman: Franca Albertini

Room

SISSA lecture hall

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|                      |   |
|----------------------|---|
| Xavier Marti         | (Inv) <i>Storing OR processing data with antiferromagnets?</i>  |
| Christian Rinaldi    | <i>Reversible spin texture in ferroelectric GeTe</i>  |
| Roberto Raimondi     | <i>Covariant conservation laws and spin Hall effect in the Dirac-Rashba model</i>                                       |
| Giovanni Maria Vinai | <i>FexMn1-x thin films at ferro/antiferromagnetic transition on PMN-PT ferroelectric substrates</i>                     |
| Piero Torelli        | <i>Magnetic phase transitions and magnetoelectric coupling in artificial multiferroic systems</i>                       |
| Marco Asa            | <i>Impact of electrodes material on the switching properties of Ferroelectric Tunnelling Junctions</i>                  |
| Bruce A. Davidson    | <i>Deterministic and robust roomtemperature exchange coupling in monodomain multiferroic BiFeO3 heterostructures</i>    |
| Aleksandr Petrov     | <i>Transport properties and polarization effects in ferromagnetic-ferroelectric bilayers using manganite thin films</i> |

**Monday, October 2**

**14:30 - 17:00**

**Orals**

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***Nanostructures and Nanotechnologies III***

Chairman: Luca Petaccia

Room

Budinich

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|                    |  |
|--------------------|--|
| Joost Wintterlin   | (Inv) <i>Operando STM of catalytic reactions</i>   |
| Silvia Nappini     | <i>Graphene nanobubbles on TiO<sub>2</sub> for in operando electron spectroscopy of liquid-phase chemistry</i>                 |
| Gabriele Irde      | <i>Dynamic SEM imaging of surface photovoltages in MAPbI<sub>3</sub> perovskites</i>   |
| Matteo Jugovac     | <i>Temperature induced transformation of graphene on cobalt films</i>  |
| Nicola Manini      | <i>Finite-temperature phase diagram and critical point of the Aubry pinned sliding transition in a 2D monolayer</i>            |
| Alberto Ambrosetti | <i>Physical Adsorption at the Nanoscale: Towards Controllable Scaling of the Substrate-Adsorbate van der Waals Interaction</i> |
| Martina Teruzzi    | <i>Markov State Modelling of Friction in a Realistic 2D Model</i>  |
| Claudia Caddeo     | <i>Ultrastable PTB7-based organic solar cells investigated by atomistic simulations</i>  |

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***Biomedicine and Biophysics III***

Chairman: Lucia Pasquato

Room

Euler

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|                    |   |
|--------------------|---|
| Sonia Contera      | (Inv) <i>Quantitative scanning probe methods for measurement and design of mechanical properties at the crossing point of biology, physics, medicine and nanotechnology</i> |
| Ljiljana Fruk      | (Inv) <i>Clickable Molecular Systems for Design of Bio-hybrid Materials</i>   |
| Claudio Canale     | <i>Interaction between misfolded protein aggregates and plasma membrane. A single cell force spectroscopy study.</i>  |
| Dan Cojoc          | <i>Cell biomechanics investigation by quantitative phase microscopy</i>   |
| Maria Lepore       | <i>MONITORING CELL MIGRATION PROCESSES IN A COLLAGEN-BASED 3D SCAFFOLD USING TWO-PHOTON MICROSCOPY</i>  |
| Francesco Orsini   | <i>Reversible Dissolution of Lipid Microdomains in Cancer Cell Membranes at Physiological Temperature</i>   |
| Francesco Spinozzi | <i>Lipid oxidation of mimetic biomembranes investigated by SAXS</i>   |



Rosa Bartucci

*Lamellar phases of dialkyl-lipids studied by CW-EPR and pulsed ESE methods*

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## ***Strongly Correlated and Disordered Electrons***

Chairman: Giorgio Sangiovanni

Room

SISSA D

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Lara Benfatto

(Inv) *Inhomogeneity in low-dimensional superconductors*

Pratap  
Raychaudhuri

*Magnetic field induced emergent granularity and the pseudogapped state in a superconducting film with weak but homogeneous disorder*

Sergio Ciuchi

*On Mooij correlations in disordered metals*

Ilaria Maccari

*BKT Transition in disordered superconducting films*

Angelo Pidatella

*Thermal transport in the Kitaev spin model*

Marcin Wysokiski

*Variational Schrieffer-Wolff transformation: Mott physics in and far from equilibrium*

Domenico Giuliano

*Chirality and Current-Current Correlation in Fractional Quantum Hall Systems*

Pier Paolo Baruselli

*Nanomechanical dissipation at a tip-induced Kondo onset*

Andrea Di Ciolo

*The operatorial approach to strongly correlated electron systems: single-particle properties of the Hubbard model in a novel four-pole approximation*

Matteo Acciai

*Out of equilibrium dynamics of single electron injection in interacting topological channels*

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## ***Computational Methods II***

Chairman: Michele Casula

Room

SISSA A

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Daniele Varsano

(Inv) *Carbon nanotubes as excitonic insulators*

Emine Kucukbenli

*ab initio Crystal Structure Prediction - Are we there yet?*

Loris Ercole

*Heat transport coefficients from optimally short molecular dynamics simulations*

Alessandra Satta

*Role of defects in the reactivity of Cd-yellow pigments*

Mariami Rusishvili

*Optical Properties of Anthocyanins*

Daniele Dragoni

*A first-principles study of liquid and amorphous phases of the In<sub>2</sub>Te<sub>3</sub> compound*

|                         |  |
|-------------------------|--|
| Ivan Carnimeo           | <i>New developments in exact exchange calculations with plane waves</i>              |
| Andrea Torchi           | <i>Simulation of lipid membrane damage by nanoparticle-induced localized heating</i> |
| Muhammad Nawaz Qaisrani | <i>Structural and dynamical properties of water and glutamine at the interface</i>   |

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## ***Atoms and Molecules for Quantum Simulation***

Chairman: Leonardo Fallani                                      Room                                      SISSA B

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|                    |  |
|--------------------|--|
| Leonardo Fallani   | (Inv) <i>New synthetic quantum systems with ultracold two-electron atoms</i>                                       |
| Jacopo Catani      | (Inv) <i>Quantum simulation of Hall systems through synthetic-dimensional Yb gases</i>                             |
| Giacomo Lamporesi  | (Inv) <i>Creation, dynamics and interaction of quantized vortices in elongated superfluids</i>                     |
| Roberta Citro      | <i>Phase diagram of a boson synthetic ladder</i>   |
| Andrea Amico       | <i>Probing the spectral response of ultracold Fermi gases after quench to strong repulsive interactions.</i>       |
| Andrea Trombettoni | <i>Nonperturbative RG treatment of amplitude fluctuations in Berezinskii-Kosterlitz-Thouless phase transitions</i> |
| Lorenzo Del Re     | <i>Selective metamagnetism of multi-component fermions in optical lattices</i>                                     |

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## ***Photonics and Quantum Information III***

Chairman: Rosario Fazio                                      Room                                      Kastler

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|                     |  |
|---------------------|--|
| Saverio Pascazio    | <i>Quantum Simulation of QED in 1D: Evidence of a Phase Transition</i>                                 |
| Cosimo Lovecchio    | <i>Quantum phase gate based on quantum Zeno dynamics</i>   |
| Giuseppe Falci      | <i>Probing Ultrastrong Coupling by Coherent Amplification of Population Transfer</i>                   |
| Fabrizio Illuminati | <i>Quantumness, geometry, and noise</i>  |
| Fabio Chiarello     | <i>Superconducting systems for single microwave-photon detection and axion dark matter search</i>      |
| Francesco Plastina  | <i>Coherence generation, irreversible Entropy production and Non-adiabaticity in quantum processes</i> |
| Mauro Paternostro   | <i>Distributing entanglement without entanglement and the quantum nature of gravity</i>                |

|                       |   |
|-----------------------|---|
| Giuliano Benenti      | <i>Dynamical Casimir effect in quantum information processing and in quantum thermodynamics</i> |
| Antonella De Pasquale | <i>Out of equilibrium thermometry</i>   |
| Simone Montangero     | <i>Recent advancements in tensor network methods</i>  |

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### ***Plasma Physics III***

| Chairman:                | Francesco Pegoraro  | Room | Infolab |
|--------------------------|---|------|---------|
| Stefano Atzeni           | (Inv) <i>Laser-driven inertial confinement fusion (ICF): the route toward ignition demonstration</i>  |      |         |
| Andrea Macchi            | (Inv) <i>High Field Femtosecond Plasmonics for Laser-Driven Sources</i>   |      |         |
| Sarasadat Ghaffarioskoei | <i>Simulation of Longitudinal and Transverse Phase Space of Electron Beam in SASE FEL Using Lienard-Wiechert Fields</i>                                       |      |         |
| Maria Rutigliano         | <i>Hydrogen scattering from a cesiated surface model</i>  |      |         |
| Paolo Ambrico            | <i>Parametric study of plasma-mediated thermoluminescence produced by Al<sub>2</sub>O<sub>3</sub> sub-micron powders</i>                                      |      |         |
| Grazia Cicala            | <i>Surface modification of diamond-rich and graphite-rich nanodiamond particles in H<sub>2</sub> microwave plasma.</i>  |      |         |
| Emilio Martines          | <i>Interaction of a low-temperature plasma with pathogens and eukaryotic cells</i>  |      |         |
| Gabriele Cristoforetti   | <i>Transition from Coherent to Stochastic electron heating in ultrashort relativistic laser interaction with structured targets and possible applications</i> |      |         |

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### ***Magnetic nanostructures, films and nanoparticles***

| Chairman:        | Dino Fiorani   | Room | SISSA lecture hall |
|------------------|--|------|--------------------|
| Paolo Vavassori  | (Inv) <i>Plasmon-assisted thermal excitation of artificial spin ices</i>                             |      |                    |
| Franca Albertini | <i>Magnetic shape memory nano-materials: from thin films to free-standing nano-disks</i>             |      |                    |
| Davide Peddis    | <i>Non-equilibrium dynamics in superspin glass systems</i>   |      |                    |
| Stefano Colonna  | <i>Structural and magnetic investigation of the Mn:GaAs(001)-(2x1) and -(2x2)</i>                    |      |                    |
| Matteo Cantoni   | <i>Controlled oxidation of Chromium ultrathin films on ferroelectric BaTiO<sub>3</sub> templates</i> |      |                    |

- Francesca Genuzio *Local SRT via controlled surface Carbon accumulation of thin Co(0001) films*
- Oleg Brovko *Mechanical control over anisotropy in magnetic endofullerenes: DySc<sub>2</sub>N@C<sub>80</sub>*
- Angelo Valli *Quantum interference assisted spin-filtering effect on graphene nanoflakes*
- Federico Motti *Strain effects of a polarized BaTiO<sub>3</sub> single crystal on the magnetic properties of a La<sub>0.65</sub>Sr<sub>0.35</sub>MnO<sub>3</sub> thin film*

**Tuesday, October 3**

**11:00 - 13:30**

**Orals**

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***Nanostructures and Nanotechnologies IV***

Chairman: Maya Kiskinova

Room

Budinich

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|                       |   |
|-----------------------|---|
| Paolo Blasi           | (Inv) <i>Protein Decorated Nanoparticles to Improve Brain Drug Delivery</i>                                       |
| Alessandro Paciaroni  | (Inv) <i>Thermal unfolding of human telomeric DNA quadruplexes. Structural and thermodynamic features.</i>        |
| Alessandra Bellissimo | <i>Mastering the secondary electron emission from single crystal surfaces by plasmons excitation</i>              |
| Emanuele Panizon      | <i>Ballistic thermophoresis: a gold cluster on graphene</i>   |
| Gianmarco Muna        | <i>Hybrid particle-field molecular dynamics study of Silica-Polystyrene nanocomposites</i>                        |
| Riccardo Fantoni      | <i>One-dimensional fluids with second nearest-neighbor interactions</i>   |
| Mirco Panighel        | <i>The FAST module: an add-on unit for driving commercial scanning probe microscopes to video rate and beyond</i> |
| Barbara Casarin       | <i>Single-Shot Optical Amorphization of Ge-Sb-Te based Nanoparticles</i>  |

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***Out of Equilibrium Statistical Physics I***

Chairman: Flavio Seno

Room

Euler

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|                         |   |
|-------------------------|---|
| David Mukamel           | (Inv) <i>Long-Range correlations in driven systems</i>  |
| Andrea Gambassi         | (Inv) <i>Dynamical crossovers and universality in prethermal critical states</i>                  |
| Nicol Defenu            | <i>Criticality in Quantum Long Range Systems</i>  |
| Francesca Pietracaprina | <i>Entanglement and length scales in a many body localizable system</i>                           |
| Stefano Mossa           | <i>Heat and sound in disordered solids</i>  |
| Ubaldo Bafle            | <i>Exponential mode analysis of time autocorrelation functions: a new route to fluid dynamics</i> |
| Pietro Anzini           | <i>Solvent mediated forces in critical fluids</i>   |
| Giulia Cencetti         | <i>Control of multidimensional systems on complex network</i>                                     |

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## ***Strongly Correlated Multi-orbital systems***

Chairman: Sergio Ciuchi

Room

SISSA D

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|                    |   |
|--------------------|---|
| Luca de Medici     | (Inv) <i>Hunds correlated metals</i>  |
| Markus Aichhorn    | <i>Spin-Orbit Coupling and Enhanced Electronic Correlations in a Three-Band Hubbard model</i>                                     |
| Adriano Amaricci   | <i>FIELD-DRIVEN MOTT GAP COLLAPSE AND RESISTIVE SWITCH IN CORRELATED INSULATORS</i>   |
| Stefania De Palo   | <i>Excitonic condensation and quadriexcitons in a symmetric electron-hole bilayer with valley degeneracy: QMC simulations</i>     |
| Alessandro D'Elia  | <i>Electronics and structural properties at the nanoscale across the Metal-Insulator transition in VO<sub>2</sub> thin films.</i> |
| Valentina Brosco   | <i>Pauli metallic ground state in Hubbard clusters with Rashba spin-orbit coupling</i>  |
| Francesco Petocchi | <i>Phase diagram of a spin-orbit coupled three-orbital Hubbard model</i>  |
| Francesco Grandi   | <i>Mott transition and anti-ferro orbital ordering in a two band Hubbard model</i>  |
| Aldo Isidori       | <i>Charge density waves in graphite: towards the magnetic ultra-quantum limit</i>   |

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## ***Novel non-equilibrium probes and emergent ultrafast phenomena***

Chairman: Claudio Giannetti

Room

SISSA A

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|                    |   |
|--------------------|---|
| Francesco Banfi    | (Inv) <i>Temperonic Crystals: coherence effects of temperature fields in Quantum Metamaterials.</i>                                   |
| Giacomo Mazza      | <i>Energy transport in correlated meta-materials</i>  |
| Emiliano Principi  | <i>Progress in experiments on nonequilibrium condensed matter at the FERMI free electron laser</i>                                    |
| Giorgia Sparapassi | <i>Noise correlation spectroscopy for non-equilibrium measurements of low energy Raman modes of electronic and vibrational origin</i> |
| Daniel T Payne     | <i>On the Influence of Defects on the Ground and Excited States of TiO<sub>2</sub></i>  |
| Michele Di Fraia   | <i>Time-resolved and imaging techniques at the Low Density Matter Beamline @ FERMI</i>  |
| Marco Gandolfi     | <i>Ultrafast thermo-optical dynamics of metal nano-objects in a transparent environment</i>   |

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## ***Atoms and Molecules for Quantum Sensing and Metrology***

Chairman: Marco Fattori

Room

SISSA B

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|                 |  |
|-----------------|--|
| Davide Calonico | (Inv) <i>OPTICAL FREQUENCY STANDARDS: TOWARD THE REDEFINITION OF THE SECOND AND QUANTUM SENSING FOR RELATIVISTIC GEODESY</i> |
| Marco Fattori   | (Inv) <i>Trapped atom interferometry for high spatial resolution sensing and metrology.</i>                                  |
| Giulio D'Amico  | (Inv) <i>Gravitational measurements with simultaneous atom interferometers</i>   |
| Leonardo Salvi  | <i>A Spin Squeezed Atom Interferometer with strontium atoms</i>  |
| Amelia Detti    | <i>A quantum mixture of ultracold lithium atoms and trapped barium ions</i>  |

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## ***Low-dimensional Materials I***

Chairman: Silvano Lizzit

Room

Kastler

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|                      |  |
|----------------------|--|
| Philip Hofmann       | (Inv) <i>Electronic structure of novel two-dimensional materials</i>                                       |
| Luca Petaccia        | <i>Superconducting properties of alkali metal functionalized layered materials probed by ARPES</i>         |
| Luca Ottaviano       | <i>Mechanical exfoliation and layer number identification of MoS<sub>2</sub> revisited</i>                 |
| Igor Pis             | <i>Fe intercalation under graphene and hexagonal boron nitride heterostructure grown on Pt(111)</i>        |
| Elisabetta Travaglia | <i>Transition from Sulfided Molybdenum Clusters to monolayer MoS<sub>2</sub> on Au(111)</i>                |
| Michele Merano       | <i>The optical response of an atomically thin crystal</i>  |
| Roberto Guerra       | <i>Graphene on h-BN: to align or not to align?</i>   |
| Luciano Ortenzi      | <i>Zero point motion and direct/indirect bandgap crossover in layered transition-metal dichalcogenides</i> |
| Tommaso Cavallucci   | <i>H coverage defects in quasi-free-standing monolayer graphene on SiC</i>                                 |

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## ***Dynamics, atomic and molecular magnetism***

Chairman: Riccardo Bertacco

Room

Infolab

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|                                  |  |
|----------------------------------|--|
| Stefano Bonetti                  | (Inv) <i>THz-driven Ultrafast Spin-Lattice Scattering in Metallic Ferromagnets</i>       |
| Stefano Rusponi                  | (Inv) <i>Long spin lifetime in rare-earth-based quantum magnets</i>                      |
| Caterina Braggio                 | <i>Optical Manipulation of a Magnon-Photon Hybrid System</i>                             |
| Flavio Capotondi                 | <i>Probing ultrafast magnetization dynamics with FEL light</i>                           |
| Alessandro Barla                 | <i>Magnetic exchange on the surface of topological insulators</i>                        |
| Manuel Mariani                   | <i>SPIN DYNAMICS IN SINGLE ION POLYOXOMETALATE SINGLE-MOLECULE MAGNET [Er(W5O18)2]9-</i> |
| Hamoon Hedayat<br>Zadeh Roodsari | <i>Collective excitations behind the ultrafast demagnetization of metals</i>             |



**Tuesday, October 3**

**14:30 - 17:00**

**Orals**

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***Superconductivity I***

Chairman: Pietro Carretta

Room

Budinich

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|                        |   |
|------------------------|---|
| Gianni Profeta         | (Inv) <i>New Iron-based Superconductors</i>   |
| Samuele Sanna          | <i>Impurity effects in optimally doped oxypnictide superconductors</i>  |
| Laura Fanfarillo       | <i>Orbital Selective Physics of Iron Based Superconductors</i>  |
| Daniele Torsello       | <i>A microwave resonator technique to study the effects of ion irradiation on the penetration depth of <math>(\text{Ba}_{1-x}\text{K}_x)\text{Fe}_2\text{As}_2</math> in the framework of the three-band Eliashberg <math>s_{\pm}</math> wave model</i> |
| Matteo Moroni          | <i>Effect of proton irradiation on the normal state low-energy excitations of <math>\text{Ba}(\text{Fe}_{1-x}\text{R}_x)_2\text{As}_2</math> superconductors</i>  |
| Alessandro Lascialfari | <i>Novel aspects of superconductive fluctuations in different classes of high-<math>T_c</math> superconductors</i>  |
| Andrea Perali          | <i>Toward very high-<math>T_c</math> superconductivity in multigap superconductors: Lifshitz transitions and mixtures of BCS and BCS-BEC crossover condensates</i>  |
| Davide Valentini       | <i>Superconducting shape resonance from quantum confinement at the LAO/STO interface</i>  |
| Arturo Tagliacozzo     | <i>Incipient Berezinskii-Kosterlitz-Thouless transition in coplanar graphene Josephson junctions</i>  |

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***Out of Equilibrium Statistical Physics II***

Chairman: David Mukamel

Room

Euler

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|                    |  |
|--------------------|--|
| Andrea Puglisi     | (Inv) <i>Vibrofluidized granular materials: an experimental walk-through</i>                                       |
| Flavio Seno        | (Inv) <i>Brownian yet non-Gaussian diffusion: from superstatistics to subordination of diffusing diffusivities</i> |
| Fausto Borgonovi   | <i>the temperature of a single chaotic eigenstate</i>  |
| Stefano Iubini     | <i>A chain, a bath, a sink and a wall</i>  |
| Alessandro Vezzani | <i>Correlated bursty dynamics in excitatory neural networks with synaptic plasticity</i>                           |

|                   |  |
|-------------------|--|
| Giacomo Gradenigo | <i>First-order transitions in the Large Deviations of non-interacting Run-and-Tumble particles</i>   |
| Fabrizio Camerin  | <i>Does the dynamical susceptibility capture the dynamical heterogeneities of the Lorentz model?</i> |
| Franco Pellegrini | <i>Markov State Modeling of Nonequilibrium Dynamics</i>  |

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## ***Topological Matter I***

|                       |   |         |
|-----------------------|---|---------|
| Chairman: Mario Cuoco | Room  | SISSA D |
| Igor Herbut           | (Inv) <i>Non-fermi liquids and fixed point collisions in 3D Luttinger semimetals</i>  |         |
| Marcello Dalmonte     | <i>Majorana Quasi-Particles Protected by <math>\mathbb{Z}_2</math> Angular Momentum Conservation</i>  |         |
| Andrea Perucchi       | <i>Optical properties across the pressure-induced topological Lifshitz transition in black phosphorus</i>   |         |
| Roberto Flammini      | <i>A scanning tunnelling microscopy and spectroscopy study of the antimonene/Bi<sub>2</sub>Se<sub>3</sub> interface</i>                               |         |
| Luca Chirolli         | <i>Time-reversal and rotation symmetry breaking superconductivity in Dirac materials</i>  |         |
| Andrea Sterzi         | <i>Time-Resolved ARPES on topologically-non trivial materials</i>   |         |
| Flavio Ronetti        | <i>Heat transport in driven topologically protected systems</i>   |         |
| Rosa Giuliano         | <i>Persistent current and zero-energy Majorana modes in a p-wave disordered superconducting ring</i>  |         |
| Chiara Bigi           | <i>Spin-resolved angular-resolved photoemission spectroscopy experiments on in-situ transferred epitaxial Bi<sub>2</sub>Se<sub>3</sub> thin films</i> |         |

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## ***Advanced inorganic and hybrid materials for perovskite-based optoelectronic devices***

|                              |   |         |
|------------------------------|---|---------|
| Chairman: Filippo De Angelis | Room  | SISSA A |
| Mohammad Khaja Nazeeruddin   | (Inv) <i>Under submission</i>   |         |
| Antonio Abate                | (Inv) <i>Active materials and interfaces for stable perovskite solar cells</i>  |         |
| Alessandro Mattoni           | <i>Temperature and water effects on the microstructure evolution of hybrid perovskites investigated by large scale molecular dynamics</i> |         |

|                  |   |
|------------------|---|
| Luca Bellucci    | <i>Graphene-based Nanostructured Models for Energy Storage Applications</i>                                   |
| Giacomo Torrisi  | <i>AZO/Ag/AZO thin films as anti-reflecting flexible transparent electrodes</i>                               |
| Thineth Jayamaha | <i>Poly (Ethylene Oxide) Based Nano-Composite Gel-Polymer Electrolytes for Sodium-Ion Secondary Batteries</i> |

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## ***Quantum Fluids of atoms and light***

**Chairman:** Iacopo Carusotto **Room** **SISSA B**

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|                    |   |
|--------------------|---|
| Iacopo Carusotto   | (Inv) <i>The parallel adventures of Quantum Fluids of Light and of Ultracold Atoms</i>                                    |
| Luca Pezze'        | (Inv) <i>witnessing entanglement with the Fisher information, from metrology to topological quantum phase transitions</i> |
| Riccardo Rota      | <i>Critical behavior of 2D dissipative spin lattices</i>  |
| Orazio Scarlatella | <i>Dissipative Phase Transition of Incoherently Driven Lattice Bosons</i>   |
| Manuele Tettamanti | <i>Hawking radiation in BECs: an exactly solvable model</i>   |
| Filippo Cardano    | <i>Detection of topological invariants in a chiral quantum walk of twisted photons</i>                                    |
| Grazia Salerno     | <i>Propagating edge states in strained honeycomb lattices</i>   |

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## ***Low-dimensional Materials II***

**Chairman:** Stefan Heun **Room** **Kastler**

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|                                       |  |
|---------------------------------------|--|
| Benjamin Sacepe                       | (Inv) <i>Gate-defined quantum point contact in graphene in the quantum Hall regime</i>             |
| Francesco Maria<br>Dimitri Pellegrino | <i>Effect of the shear and Hall viscosities on hydrodynamic transport in graphene</i>              |
| Leonardo Martini                      | <i>Chemically synthesized Graphene Nanoribbon devices using graphene as the contact electrodes</i> |
| Didier Bathellier                     | <i>Edge states in bilayer graphene: the effect of magnetic catalysis and broken symmetries</i>     |
| Federico Grasselli                    | <i>Quantum propagation of a correlated electron-hole pair in semiconductor heterostructures</i>    |
| Marco Smerieri                        | <i>From organometallic structures to graphene nanoribbons: Dibromopyrene on Ag(110)</i>            |
| Luca Vannucci                         | <i>Electron quantum optics at fractional filling</i>   |

Daniele Guerci

*Weak localization corrections to the spin transport coefficients in two-dimensional electron gases in the presence of Rashba spin-orbit coupling*

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## ***Sensors, Devices and Applications***

Chairman: Giorgio Sberveglieri

Room

Infolab

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Elisabetta Comini (Inv) *Development and characterization of semiconducting oxides for gas sensors*

Arnaldo D'Amico (Inv) *Descrizione di un nuovo modello elettronico per il processo di adsorbimento/desorbimento di composti volatili in superfici di sensori tipo Langmuir: determinazione della densità di stati di superficie e descrizione analitica del fenomeno del getter.*

Pasquale Pagliusi *In situ molecular-level picture of receptor-ligand interaction at interfaces*

Marco Faverzani *Direct calorimetric measurement of the neutrino mass with HOLMES*

Lorenzo Maccone *Digital Quantum Metrology*

Alessia Irrera *Label-free optical Si nanowire-based biosensors*

Mario Urso *Low-cost and controlled synthesis of Ni nanofoam for non-enzymatic glucose sensing*

Rossella Yivlialin *Blister evolution timing during graphite anion intercalation: a new interpretative model*

**Wednesday, October 4**

**11:00 - 13:30**

**Orals**

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***Superconductivity II***

Chairman: Giacomo Ghiringhelli

Room

Budinich

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Riccardo Comin (Inv) *RESONANT SCATTERING STUDIES OF ELECTRONIC ORDERS IN QUANTUM SOLIDS*

Carlo Di Castro (Inv) *Charge order and its role in the physics of cuprates*

Alberto Nocera *Signatures of pairing in the magnetic excitation spectrum of strongly correlated ladders*

Roberto Fumagalli *Fully polarized RIXS of superconducting cuprates*

Jean Paul Latyr  
FAYE *Pseudogap to metal transition in the anisotropic two-dimensional Hubbard model*

Ettore Carpene *Jahn-Teller and excitons contributions in the 1T-TiSe<sub>2</sub> charge density wave system*

Marcello Spera *Energy dependent domain formation in the CDW of 1T-Cu<sub>x</sub>TiSe<sub>2</sub>*

Denis Aron *An unconventional quantum spin liquid with atomic-cluster spins in 1T-TaS<sub>2</sub>*

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***Ultrafast dynamics in 2D and topological materials***

Chairman: Francesco Banfi

Room

Euler

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Stefano Dal Conte (Inv) *Ultrafast exciton and valley dynamics in two-dimensional materials*

Christoph  
Gadermaier *Non-equilibrium photophysics of semiconducting 2d transition metal dichalcogenides*

Andrea Tomadin *The ultrafast dynamics and THz photoconductivity of graphene at variable carrier density*

Alessandra Virga *The role of electron-phonon scattering in the Raman spectrum of Graphene in presence of highly excited charge carriers*

Eva Arianna  
Aurelia Pogna *Non-equilibrium optical properties of encapsulated graphene*

Davide Sangalli *Pump and probe experiments from first principles*

Matteo Lucchini *Time-resolved dynamical Franz-Keldish effect in Diamond*

|               |   |
|---------------|---|
| Franca Manghi | <i>Graphene under intense laser fields: edge states, High Harmonic Generation and other unconventional features.</i>                              |
| Davide Bugini | <i>Ultrafast spin-current and spin-accumulation in topological insulators investigated by time- and angle-resolved photoemission spectroscopy</i> |

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## ***Topological Matter II***

| Chairman:             | Marcello Dalmonte  | Room | SISSA D |
|-----------------------|--|------|---------|
| Giorgio Sangiovanni   | (Inv) <i>Edge state reconstruction from strong correlations in quantum spin Hall insulators</i>                        |      |         |
| Ivana Vobornik        | <i>Electronic Band Structure and Spin-Orbit Coupling in IrO<sub>2</sub></i>  |      |         |
| Mario Cuoco           | <i>Designing topological states, spin textures and superconducting pairing by shape deformation</i>                    |      |         |
| Domenico Di Sante     | <i>Robust spin-polarized midgap states at step edges of topological crystalline insulators</i>                         |      |         |
| Jun Fujii             | <i>Three-Dimensional Electronic Structure of type-II Weyl Semimetal WTe<sub>2</sub></i>                                |      |         |
| Niccol Traverso Ziani | <i>Signatures of interaction-induced helical gaps in nanowire quantum point contacts</i>                               |      |         |
| Lorenzo Privitera     | <i>Non-adiabatic breaking of topological pumping</i>   |      |         |
| Philipp Schuetz       | <i>Dimensionality-Driven Semimetal-Insulator Transition in Ultrathin Films of Spin-Orbit Coupled SrIrO<sub>3</sub></i> |      |         |
| Luca Lepori           | <i>Long-range topological insulators and weakened bulk-boundary correspondence</i>                                     |      |         |

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## ***Advanced materials for photovoltaics and artificial photosynthesis***

| Chairman:          | Paolo Giannozzi   | Room | SISSA A |
|--------------------|---|------|---------|
| Filippo De Angelis | (Inv) <i>Modelling materials and processes in perovskites solar cells</i>                         |      |         |
| Giuseppe Mattioli  | (Inv) <i>Ab Initio Simulations of Metal-Oxo Cores for Photosynthesis</i>                          |      |         |
| Nicola Seriani     | <i>Multifaceted behaviour of hydrogen in titania</i>  |      |         |
| Gloria Zanotti     | <i>From light harvesting to charge transport: phthalocyanines in hybrid-organic photovoltaics</i> |      |         |
| Kanchan Ulman      | <i>A Unified Picture of Water Photo-oxidation on Hematite from Density Functional Theory</i>      |      |         |

|                             |   |
|-----------------------------|---|
| Francesco Toschi            | <i>The effect of DNA on the Electron Extraction Layer in Organic Solar Cells: an Ultrafast Spectroscopic Study</i>                                |
| Matteo Amati                | <i>Scanning Photoemission Imaging and Spectromicroscopy, a powerful tool for in situ and in operando characterization of Fuel Cell components</i> |
| Luis Guillermo Mendoza Luna | <i>Enhancement of light transmission through random copper thin-films near the percolation threshold</i>  |

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### ***Statistical Physics Methods in Neuroscience and Biology***

|                               |  |         |
|-------------------------------|--|---------|
| Chairman: Cristian Micheletti | Room   | SISSA B |
| Riccardo Zecchina             | (Inv) <i>Out-of-equilibrium states and quantum annealing speed up in non-convex optimization and learning problems</i> |         |
| Mattia Zampieri               | (Inv) <i>The metabolic landscape of antibiotic modes of action</i>   |         |
| Roberto Cerbino               | (Inv) <i>Unjamming and Flocking in Jammed Epithelia</i>  |         |
| Daniele De Martino            | <i>Statistical mechanics of metabolic networks</i>   |         |
| Duccio Fanelli                | <i>Noise driven neuromorphic tuned amplifier</i>   |         |
| Eleonora Secchi               | <i>The flow of a bacterial suspension around a pillar: broken simmetry and biofilm formation</i>                       |         |

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### ***Low-dimensional Materials III***

|                           |   |         |
|---------------------------|---|---------|
| Chairman: Benjamin Sacepe | Room  | Kastler |
| Deborah Prezzi            | (Inv) <i>Illuminating graphene nanoribbons: insights from ab-initio simulations</i>                   |         |
| Polina Sheverdyayeva      | <i>Supported 2D honeycomb-like materials: the case of silicene</i>                                    |         |
| Stefan Heun               | <i>Li-intercalated Graphene on SiC(0001): an STM study</i>  |         |
| Viktor Kandyba            | <i>Micro-ARPES study of graphene-based compounds</i>  |         |
| Luca Vattuone             | <i>CO chemisorption at pristine, doped and defect sites on Graphene/Ni(111)</i>                       |         |
| Lorenzo Avaldi            | <i>Electron pair escape in C60 via collective modes</i>   |         |
| Alessandro Sala           | <i>Growth and electronic structure of Graphene on Ni(100)</i>   |         |
| Carlo Maria Bertoni       | <i>Graphene on transition and noble metals surfaces: electronic structure and surface passivation</i> |         |

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***Environmental physics***

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| Chairman:          | Carmine Serio   | Room | Infolab |
|--------------------|---|------|---------|
| Xiuqing Hu         | (Inv) <i>History and Future of Chinese Meteorological Satellites - Fengyun (FY) series</i>  |      |         |
| Carmine Serio      | <i>Physically-based simultaneous retrieval for CO, CO<sub>2</sub>, CH<sub>4</sub>, HNO<sub>3</sub>, NH<sub>3</sub>, OCS and N<sub>2</sub>O from IASI observations and inter-comparison with in situ observations and AIRS, GOSAT, OCO-2 satellite products.</i> |      |         |
| Xuan Wang          | <i>Development of a High Spectral Resolution Lidar for Space Applications</i>   |      |         |
| Alessia Sannino    | <i>Retrieval of atmospheric aerosol microphysical parameters from the AERONET data-set.</i>   |      |         |
| Simona Scollo      | <i>Lidar measurements at Mt. Etna, in Italy: new insights on plume dispersal</i>  |      |         |
| Andrea D'Anna      | <i>Characterization of particulate matter over the Napoli harbor</i>  |      |         |
| Alberto Sorrentino | <i>Estimating aerosol microphysical parameters from LIDAR data with Monte Carlo</i>   |      |         |
| Carmen de Marco    | <i>LIDAR Technology in Air Quality Monitoring</i>   |      |         |



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***Superconductivity III***

Chairman: Andrey Varlamov

Room

Budinich

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|                      |   |
|----------------------|---|
| Francesco Tafuri     | (Inv) <i>The new frontiers of the Josephson effect in novel unconventional nano-scale and magnetic junctions</i>                  |
| Xiao-Jia Chen        | (Inv) <i>Discovery of superconductivity in polyparaphenylene oligomers</i>  |
| Emmanuele Cappelluti | <i>Signature of anisotropic photoinduced doping and dynamical Fermi surface shrinking in MgB<sub>2</sub> by pump-probe optics</i> |
| Francesca Giusti     | <i>Optical control of the superconducting gap in optimally doped B2212 with mid-infrared pulses</i>                               |
| Erik Piatti          | <i>Ionic gating in superconducting thin films: control of bulk superconductivity via surface-bound electric fields</i>            |
| Gaetano Senatore     | <i>Pairing gap in the BCS-BEC crossover in a symmetric electron-hole bilayer with valley degeneracy</i>                           |
| Giacomo Ghiringhelli | <i>New generation RIXS of 3d transition metal oxides</i>  |
| Alessandro Braggio   | <i>Entanglement control in hybrid quantum-dot Cooper pair splitters</i>   |

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***Non-equilibrium phenomena in superconductors and correlated materials***

Chairman: Stefano Dal Conte

Room

Euler

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|                   |  |
|-------------------|--|
| Claudio Giannetti | (Inv) <i>Non-equilibrium phenomena in correlated materials</i>   |
| Federico Cilento  | <i>Antinodal collapse in superconducting copper oxides driven by charge-transfer manipulation</i>            |
| Adolfo Avella     | <i>BCS superconductors: the out-of-equilibrium response to a laser pulse</i>                                 |
| Tommaso Cea       | <i>ultra-fast time resolved spectroscopy in superconductors</i>  |
| Andrea Nava       | <i>Cooling quasiparticles in A<sub>3</sub>C<sub>60</sub> fullerides by excitonic mid-infrared absorption</i> |
| Denis Golez       | <i>Nonequilibrium dynamics in charge transfer insulators</i>   |

Alexandre Marciniak *Vibrational control of d-d electronic transition in CuGeO<sub>3</sub>*

Igor Vaskivskyi *Real-time tracking of ultrafast insulator-to-metal transition in charge density wave system*

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## ***SISN I***

Chairman: Francesco Spinozzi

Room

SISSA D

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Yuri Gerelli *TIMESCALE OF PHOSPHOLIPID FLIP-FLOP REVEALED BY NEUTRON REFLECTOMETRY*

Antonio Benedetto *The Effect of Room-Temperature Ionic Liquids on (model) Biomembranes: a joint Neutron Scattering, AFM, and Computer Simulation Study*

Antonino Pietropaolo *14 MeV neutrons for medical application: a scientific case <sup>99</sup>Mo/<sup>99m</sup>Tc production*

Davide Flammini *A possible approach to 14 MeV neutron moderation: A preliminary study case*

Ernesto Scoppola *Floating Lipid Bilayers at the Liquid/Liquid interface*

Claudia Mondelli *Modelling Option USANS for SANS instruments: the project OPUS for LoKI@ESS and the upgrade of D11@ILL*

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## ***Photonic Materials and Devices***

Chairman: Francesco Priolo

Room

SISSA A

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Lorenzo Pavesi (Inv) *Classical and Quantum Integrated Silicon Photonics*

Giuseppe Gigli (Inv) *Hybrid Perovskite based materials for Optoelectronics*

Maria Jos Lo Faro (Inv) *Silicon Nanowires: the route from synthesis towards applications*

Ottavia Jedrkiewicz *Experimental evidence of Superresonant Parametric Generation in Nonlinear Photonic Crystals*

Carlo Rizza *Metamaterials with moderate-index inclusions*

Marco Passoni *Slow light in Silicon-On-Insulator grating waveguides*

Gagan Kumar *Plasmon induced transparency in graphene based terahertz metamaterials*

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## ***Semiconductors and Oxides I***

Chairman: Roberto Fornari

Room

SISSA B

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|                     |  |
|---------------------|--|
| Raffaella Calarco   | (Inv) <i>Fabrication of Ordered Phase Change Materials: From Fundamental Properties to Applications</i>  |
| Bla Winkler         | <i>Correlations between Structural and Optical Properties of Peroxy Bridges from First Principles</i>  |
| Marco Caputo        | <i>Electronic structure of LAO/STO thin film: quantum well states or enhanced polaronic tail?</i>  |
| Paola Di Pietro     | <i>Optical properties of nickelate heterostructures</i>  |
| Nicolas Salles      | <i>Atomic scale investigation of local strain effect on the primary stages of silicon oxidation process using a coupling between Activation Relaxation Technique and first principles calculations</i> |
| Federico Bottegoni  | <i>Spin-Hall effect in bulk germanium</i>  |
| Francesco Filippone | <i>An ab initio study of solitary-cation properties in <math>\text{In}_x\text{Ga}(1-x)\text{N}</math> alloys</i>   |
| Davide Tedeschi     | <i>Spin and transport properties of electrons and holes in <math>\text{InP}</math> wurtzite nanowires assessed by magneto-optical measurements and <i>kp</i> calculations</i>                          |
| David Dellasega     | <i>Pulsed Laser Deposition of tungsten-on-silicon ohmic contacts at room temperature</i>   |

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## ***Polymers, Organic molecules and Thin Films I***

Chairman: Alon Gorodetsky

Room

Kastler

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|                     |   |
|---------------------|---|
| Dimas de Oteyza     | (Inv) <i>Synthesis and characterization of atomically precise graphene nanoribbons</i>  |
| Albano Cossaro      | (Inv) <i>2D functional templates on metal surfaces</i>  |
| Elena Molteni       | <i>Effect of stacking on the optical properties of eumelanin protomolecules: a TD-DFT study</i>   |
| Marianna Ambrico    | <i>Polydopamine nanofragments redox activity tuned via ionic liquid nanofragmentation: a possible route for innovative biomedical solutions</i> |
| Luca Pasquali       | <i>Layer-resolved molecular organization of pentacene thin films for organic transistors by Resonant Soft X-ray Reflectivity</i>                |
| Giovanni Zamborlini | <i>Multi-orbital charge transfer at highly oriented organic/metal interfaces</i>  |

Matteo Altissimo

*Perspective: a Toolbox for Protein Structure Determination in Physiological Environment through oriented, 2-D ordered, site specific immobilization*

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## ***Biomolecular Modeling***

Chairman: Roberto Cerbino

Room

Infolab

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Guido Tiana (Inv) *Maximum-entropy modelling of biomolecules*

Fabio Cecconi *Frequency-control of protein translocation across an oscillating nanopore*

Antonio Trovato *Linking in domain-swapped protein dimers*

Andrea Cesari *Combining simulations and solution experiments as a paradigm for RNA force field refinement*

Antonio Suma *Pore translocation of knotted DNA rings*

Negar Nahali *Glassiness and Heterogeneous Dynamics in Entangled Solutions of Ring Polymers*

Mattia Marena *Sorting ring polymers by knot type with modulated nanochannels*

Matteo Adorisio *Exact and efficient sampling of constrained walks*

Luca Tubiana *Chirality modifies the interaction between knots on stretched semiflexible polymers*

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## ***SILS I***

Chairman: Andrea Di Cicco

Room

SISSA lecture hall

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Giorgio Rossi (Inv) *Spin Polarization Research Infrastructure in the Nanoscale and Time domains*

Valentina Bonanni *X-ray magnetic circular dichroism discloses surface spins disorder in maghemite hollow nanoparticles*

Federico Boscherini *Element specific channels in photo excitation of V doped TiO<sub>2</sub> nanoparticles*

Alice Moros *Local structure of (Ce<sub>1-x</sub>Lu<sub>x</sub>)O<sub>2-x/2</sub> studied by x-ray absorption spectroscopy*

Piero Torelli *APE-High Energy beamline: a laboratory for the investigation of the electronic properties of nanostructured materials in-operando condition*

Ilaria Carlomagno *Cobalt-oxide reduction upon annealing: thermally-induced film purification after intercalation under Gr*

Rossella Arletti *Unravelling the energetic performances of all silica zeolites: High-Pressure X-Ray Powder Diffraction experiments on Si-CHA*

Thursday, October 5

14:30 - 17:00

Orals

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***Polymers, Organic molecules and Thin Films II***

Chairman: Dimas de Oteyza

Room

Budinich

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|                   |   |
|-------------------|---|
| Alon Gorodetsky   | (Inv) <i>Dynamic Materials: From Squid to Shapeshifters</i>   |
| Chiara Piotto     | <i>Fluorinated Substrates for Laser Desorption Ionization</i>   |
| Luca Schio        | <i>Angle-resolved photoelectron spectroscopy of the Epichlorohydrin chiral molecule</i>   |
| Alberto Verdini   | <i>Study of stability of Ruthenocene on Ag(111) and Cu(111) by means of X-ray Photoemission and Absorption Spectroscopies</i>           |
| Guido Fratesi     | <i>Evidence of corannulene tilting on Ag(111)</i>   |
| Anu Baby          | <i>Electronic and structural properties of K doped PTCDA monolayer on Ag(111)</i>   |
| Giovanni Di Santo | <i>Polycyclic Aromatic Hydrocarbons on Cu(111): a clue on surface assembly and electronic properties</i>                                |
| Luca Floreano     | <i>Porphyrin self-metalation on rutile TiO<sub>2</sub>(110): molecule incorporation of titanium or substrate capture of porphyrin ?</i> |
| Irene Benni       | <i>Pyrene-labelled ferritin as an excimer fluorescence based probe to study protein conformational changes</i>                          |

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***Non-equilibrium phenomena in open quantum system***

Chairman: Andrea Gambassi

Room

Euler

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|                      |   |
|----------------------|---|
| Alessandro Silva     | (Inv) <i>Nonequilibrium dynamics in synthetic quantum matter: common themes and challenges.</i> |
| Davide Rossini       | (Inv) <i>Dissipation in adiabatic quantum computers: Lessons from an exactly solvable model</i> |
| Francesco Peronaci   | <i>Strong correlations in the dynamics of quenched and driven lattice quantum systems</i>       |
| Angelo<br>Russomanno | <i>Floquet time-crystal in the Lipkin-Meshkov-Glick model</i>                                   |
| Silvia Pappalardi    | <i>Multipartite entanglement after a quantum quench</i>   |

|                              |   |
|------------------------------|---|
| Nagamalleswara<br>Rao Dasari | <i>Photo-carrier relaxation of correlated band insulators</i>                               |
| Alberto Biella               | <i>Nonequilibrium phases of an incoherently-driven strongly correlated photonic lattice</i> |
| Luca Arceci                  | <i>Dissipative Landau-Zener problem and thermally assisted quantum annealing</i>            |

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## ***SISN II***

|                       |  |         |
|-----------------------|--|---------|
| Chairman: Fabio Bruni | Room   | SISSA D |
| Caterina Petrillo     | <i>Neutron Landscape in Europe</i>   |         |
| Stefano Carretta      | <i>Portraying entanglement between molecular qubits with four-dimensional inelastic neutron scattering</i> |         |
| Valeria Rondelli      | <i>Amyloid peptides aggregation and their interaction with raft-mimic model membranes</i>                  |         |
| Andrea Piovano        | <i>Neutrons for Energy. How neutron spectroscopy helps understanding thermoelectric materials</i>          |         |
| Andrea Orecchini      | <i>Hydration vs. Bulk Water: what we have learnt from high-frequency collective modes</i>                  |         |
| Francesca Natali      | <i>Italian activities at ILL</i>   |         |

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## ***Nanophotonics, plasmonics and photovoltaics***

|                          |   |         |
|--------------------------|---|---------|
| Chairman: Giuseppe Gigli | Room  | SISSA A |
| Cosimo Gerardi           | (Inv) <i>Innovative silicon heterojunction technology for reducing energy generation costs in PV solar plants</i> |         |
| Faustino Martelli        | (Inv) <i>Ultrafast carrier dynamics in Au and Ag 3D nanoparticles arrays formed on silica nanowires</i>           |         |
| Daniele Sanvitto         | (Inv) <i>Polaritons condensates: from macroscopic quantum phenomena to entanglement</i>                           |         |
| Stefano Cusumano         | <i>Interferometric Quantum Cascade Systems</i>  |         |
| Belen Sotillo            | <i>Femtosecond laser fabrication of waveguides and NV centers in diamond</i>                                      |         |
| Daniele Aurelio          | <i>Electromagnetic field enhancement in Bloch surface waves</i>   |         |

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## ***Semiconductors and Oxides II***

Chairman: Raffaella Calarco

Room

SISSA B

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|                          |   |
|--------------------------|---|
| Roberto Fornari          | (Inv) <i>Epsilon-Ga<sub>2</sub>O<sub>3</sub>: a novel wide-bandgap semiconductor</i>  |
| Andrea Picone            | <i>Well-ordered ultrathin oxides on magnetic substrates: tuning the magnetic properties through atomic scale control of the interface chemistry</i>           |
| Patrizia Borghetti       | <i>Orientation-dependent chemistry and band-bending of Ti on polar ZnO surfaces</i>   |
| Silvia Maria Pietralunga | <i>Nanostructured WO<sub>3</sub> n-n junctions grown by reactive RF sputtering as efficient photoanodes for water splitting</i>                               |
| Maurizio Zani            | <i>Electron dynamics in aluminum oxide thin film revealed by Ultrafast Scanning Electron Microscopy (USEM)</i>  |
| Pasquale Orgiani         | <i>Origin and evolution of electronic properties of TiO<sub>2</sub> anatase thin films: from a surface 2-dimensional gas to a bulk localized in-gap state</i> |
| Giovanni Drera           | <i>Direct probing of all-oxide heterostructures band junction profile through photoelectron spectroscopy</i>  |
| Maria Antonietta Fazio   | <i>Nanoscale electrical characterization and interface analysis of Si-based thin layers for photovoltaic applications</i>                                     |
| Jan Hostaa               | <i>Effect of rare earth ions doping on the thermal properties of YAG transparent ceramics</i>   |
| Luigi Giacomazzi         | <i>Color centers in P-doped and Yb-doped silica optical fibers: a first-principles investigation.</i>   |

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## ***Complex Systems***

Chairman: Fabio Cecconi

Room

Kastler

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|                     |   |
|---------------------|---|
| Irene Giardina      | (Inv) <i>Dynamic scaling in natural swarms</i>  |
| Samir Suweis        | <i>Cooperation promotes biodiversity and stability in a model ecosystem</i>   |
| Sergio Caserta      | <i>Dynamic evolution of cell systems</i>  |
| Camilla Ferrante    | <i>Reaction rates measured in a microfluidic device with Fluorescence Lifetime Imaging Microscopy</i>                 |
| Pedro A. Sanchez    | <i>Controlling generic microscopic active particles with magnetic fields</i>  |
| Francesca Cuturello | <i>Predicting RNA structure based on direct co-evolutionary couplings obtained with Boltzmann learning techniques</i> |

|                |   |
|----------------|---|
| Emiliano Poli  | <i>On the Origins of the Charging of Water at the Air-Water Interface</i>   |
| Romano Lapasin | <i>A rheological study on the sucrose-induced self-assembly of HM pectin</i>  |
| Haidar Sabbagh | <i>A Model for the Diffusion of Polymeric Melts based on the Generic van der Waals Equation of State and the Free Volume Theory</i> |

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## ***SILS II***

|                        |      |                    |
|------------------------|------|--------------------|
| Chairman: Silvia Gross | Room | SISSA lecture hall |
|------------------------|------|--------------------|

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|--------------------------|---|
| Filippo Bencivenga (Inv) | <i>Wave-mixing experiments based on XUV transient gratings</i>  |
| Andrea Perucchi          | <i>The TeraFERMI beamline for THz nonlinear studies</i>   |
| Adriano Verna            | <i>Space-charge effects in time-resolved photoelectron spectroscopy with free-electron laser radiation</i>            |
| Francesco Bisio          | <i>Long-living non-thermal electron distribution in aluminum excited by femtosecond extreme-ultraviolet radiation</i> |
| Paolo Dolcet             | <i>Binary vanadates: effect of dopant ions on structural features</i>   |
| Giorgia Confalonieri     | <i>Nano perovskite and the size effect: the case of BaTiO<sub>3</sub> doped by Ce<sup>IV</sup></i>                    |
| Angela Trapananti        | <i>XAS study of the Lithium storage mechanism in transition metal-doped ZnO anodes</i>                                |
| S. Javad Rezvani         | <i>Reversible interface formed on metal alloy oxide nanoparticles via lithiation</i>                                  |
| Luca Braglia             | <i>Insertion of Mn(II) and Nb(IV) atoms in the cornerstone of MOF-5: XANES and EXAFS studies</i>                      |



**Friday, October 6**

**09:00 - 11:30**

**Orals**

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***SILS III***

Chairman: Rossella Arletti

Room

Budinich

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|                     |  |
|---------------------|--|
| Alberto Bravin      | (Inv) <i>Removal signs of chronic pain by in vivo modulation of brain cortical sensory circuits</i>  |
| Luca Brombal        | <i>Phase contrast breast-CT: from the workflow optimization to the 3D reconstruction</i>   |
| Diego Pontoni       | <i>Mixed surfactant-nanoparticle thin films at water-oil interfaces studied by synchrotron x-ray scattering and atomic force microscopy.</i> |
| Paola Bolognesi     | <i>Synchrotron radiation and coincidence experiments on isolated biomolecules, from fundamental study to applications</i>                    |
| Nicola Dengo        | <i>Following crystallization of ZnS nanostructures in confined space by in-situ continuous flow miniemulsion process</i>                     |
| Francesco Benedetti | <i>Investigating Ce-doped bioactive glasses structure and catalase mimetic activity with XAS</i>   |
| Elisa Rodeghero     | <i>Structural study of the adsorption and desorption process of Volatile Organic Compounds confined to the hydrophobic ZSM-5</i>             |
| Lorenzo Mino        | <i>Tuning the electrical properties of functional oxides using a hard X-ray nanobeam</i>   |

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***SISN III***

Chairman: Marco Zanatta

Room

Kastler

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|--------------------|--|
| Silvia Imberti     | (Inv) <i>Total neutron scattering: the order of disorder</i> |
| Andrea Orecchini   | <i>T-REX: a bispectral chopper spectrometer for ESS</i>      |
| Stefano Bellissima | <i>VESPA@ESS</i>   |
| Giuseppe Gorini    | <i>SANS detectors</i>  |
| Luca Silvestrin    | <i>LINUS: the Legnaro integrated neutron sources suite</i>   |
| Fabio Bruni        | <i>Sorgentina</i>  |
| Silvia Imberti     | <i>ISIS: current status and perspectives</i>                 |

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## Poster session Monday

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|--------------------------------|---|
| <i>Iole Armenise</i>           | e- + CO <sub>2</sub> collisions: vibraional kinetics and eedf   |
| <i>Giancarlo Cappellini</i>    | Prominent documents and books of Sardinia cultural heritage: a first Raman spectroscopy study.  |
| <i>Matteo Vallar</i>           | Neutral beam deposition profiles in JT-60 SA at various plasma composition and different injection energies   |
| <i>Giovanni Pietraroia</i>     | HEWL amyloid aggregates effects on model lipid membranes.   |
| <i>Riccardo Borghi</i>         | Sharp-edge diffraction theory revisited: a catastrophic perspective   |
| <i>Pietro Vincenzi</i>         | Layout and first measurements of the RING optical cavity for laser NBI photoneutralization  |
| <i>Giancarlo Cappellini</i>    | Optical properties of Si-atoms substituted graphene nanoribbons: a TDF-DFT computational study  |
| <i>Paolo Zucchiatti</i>        | Study of nucleic acids extracted from tumor cells by means of UV Resonant Raman and FTIR spectroscopies   |
| <i>Ali Sabbagh</i>             | A Model for the Diffusion of Polymeric Melts based on the Generic van der Waals Equation of State and the Free Volume Theory                                    |
| <i>Iris Agresti</i>            | Experimental benchmark of Boson Sampling with pattern recognition techniques  |
| <i>Paolo Moretti</i>           | SAXS investigations of intrinsically disordered proteins  |
| <i>Paolo Ambrico</i>           | Reduction of microbial contamination and improvement of germination of sweet basil ( <i>Ocimum basilicum</i> L.) seeds via Surface Dielectric Barrier Discharge |
| <i>Paola De Nuntiis</i>        | Pollutants monitoring for the preservation of cultural heritage: the case study of the Museo di Capodimonte   |
| <i>Luisa Ulloa Severino</i>    | Carbon nanotubes induce regulation of valvular interstitial cells fate  |
| <i>Matteo Altissimo</i>        | Multi-purpose, re-sealable integrated wet cell for vacuum applications  |
| <i>Ilaria Rago</i>             | CNT-based scaffolds interfacing neurons: a promising bio-hybrid system for the enhancement of brain network activity  |
| <i>Fabrizio C. Adamo</i>       | Insights into the nematic phase of all-aromatic liquid crystals   |
| <i>Filomena Catapano</i>       | Current sheets with inhomogeneous plasma temperature: Effects of polarization electric field and 2D solutions   |
| <i>Vito Capozzi</i>            | Raman investigation of human peripheral blood monocyte cells exposed to 1.8 GHz electromagnetic fields  |
| <i>Francesca Ripanti</i>       | Measuring oxidized DNA and RNA precursors by Micro-Raman spectroscopy   |
| <i>Victor Martn Galvn Josa</i> | Study of manufacturing processes on archaeological ceramics by Small Angle Neutron Scattering   |
| <i>Vanni Antoni</i>            | Preliminary study for an alternative new concept of an efficient negative ion source  |
| <i>Stefano Atzeni</i>          | Synthetic diagnostics for laser-driven plasmas using hydrodynamic simulations   |

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|---------------------------------|--|
| <i>Sara Catalini</i>            | Vibrational study of self-assembly of proteins for the formation of hydrogels                                      |
| <i>Sarasadat Ghaffarioskoei</i> | Frequency Shift of Raman Backscattering of High-Intensity Laser Beams in Magnetized Plasmas                        |
| <i>Alessandra Gianoncelli</i>   | Recent developments and achievements at the TwinMic spectromicroscopy beamline of Elettra synchrotron              |
| <i>Seher Karakuzu</i>           | Superconductivity, charge-density waves, and antiferromagnetism in the Hubbard-Holstein model                      |
| <i>Fabio Perissinotto</i>       | Iron induces specific interactions of alpha synuclein with artificial lipid bilayers                               |
| <i>Francesco Orsini</i>         | Atomic force microscopy imaging of human aquaporin 4 expressed in <i>Xenopus laevis</i> oocytes                    |
| <i>Sarasadat Ghaffarioskoei</i> | A Kinetic Approach in the Analysis of Raman Scattering in a Plasma in the Presence of a Relativistic Electron Beam |

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*Poster session Tuesday*

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|--|---|
| <i>Fatema Yahya<br/>Mohamed</i>                              | Iron Phthalocyanine on ultrathin alumina template   |
| <i>Giacomo Messina</i>                                       | Characterization of 4H-Silicon Carbide addressed to thermo-optic effect at fiber-optic communication wavelengths  |
| <i>Lucia Coronel</i>   | Non-monotonic knotting probability and knot length of semiflexible rings: the competing roles of entropy and bending energy                             |
| <i>David Roilo</i>   | Gas transport and free volume in epoxy resin nanocomposite membranes  |
| <i>Yusuf Shaidu</i>  | Lithium interaction with graphene and its fragments   |
| <i>Djelti Radouan</i>  | First principles prediction of thermodynamic properties of the orthorhombic CaGeO <sub>3</sub> perovskite   |
| <i>Abhishek kumar</i>  | Influence of substrate dependent interface dipole on interface energetics of porphyrin adlayers   |
| <i>Jacopo Chiarinelli</i>                                    | ElectroSpray Deposition for biosensor application: instrument design and deposit analysis from ambient pressure to vacuum                               |
| <i>Enrico Gianfranco<br/>Campari</i>                         | Anelasticity and scaling effects in thin metal films  |
| <i>Cesare Grazioli</i>                                       | Electronic structure of short chain oligothiophenes: the role of the sulphur atom   |
| <i>Elena Molteni</i>   | Sp carbon chains suspended across nucleobase-functionalized Si(001) surfaces  |
| <i>Francesco Rundo,<br/>Sabrina Conoci, P.G.<br/>Fallica</i> | An innovative Reaction-Diffusion Bio-inspired Pipeline for Physiological Signals Analysis   |
| <i>Giuseppe Mattioli</i>                                     | Design of Novel (1)Benzothieno(3,2-b)benzothiophene (BTBT) n-type Derivatives for Organic Electronics: A Joint Experimental and Ab Initio Investigation |
| <i>Giuliana Faggio</i>                                       | Low temperature graphene as interfacial layer in graphene/Si Schottky barrier solar cells   |
| <i>Giorgio Biasiol</i>                                       | Diluted 2D electron gases in In <sub>0.75</sub> Ga <sub>0.25</sub> As/In <sub>0.75</sub> Al <sub>0.25</sub> As quantum wells                            |
| <i>Pietro Anzini</i>   | How roughness affects the depletion mechanism   |
| <i>Yanier Crespo<br/>Hernandez</i>                           | Pressure Induced Frictional Pinning Transition in Hetero-bilayers : h-BN/MoS <sub>2</sub>   |
| <i>Virginia Carnevali</i>                                    | Moir relations for a superlattice generated by two generic Bravais lattices   |
| <i>Tereza Steinhartova</i>                                   | Avalanche photodiodes based on GaAs/AlGaAs- the detectors for 4th generation light sources  |
| <i>Silvia Gabardi</i>  | Atomistic Simulations of Crystallization Kinetics and Aging of GeTe nanowires   |
| <i>Salvatore Petralia</i>                                    | NiO based nanostructures for sensor devices   |
| <i>Salvatore Petralia</i>                                    | A bifunctional graphene oxide nanohybrid for photostimulated nitric oxide release and photothermia  |

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|---------------------------------|--|
| <i>Sabrina Conoci</i>           | Electrochemical Biosensor for PCR free Nucleic Acids Detection   |
| <i>Roberto Costantini</i>       | SUNDYN: A novel setup for optical pump/X-ray probe spectroscopy at the ALOISA beamline   |
| <i>Riccardo Mincigrucci</i>     | New methodologies and tools to superpose IR and free electron laser beams  |
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| <i>Maria Florencia Ludovico</i> | Time resolved energy transfer in ac driven quantum dots: How to probe the energy reactance   |
| <i>Matus Stredansky</i>         | Synthesis of a novel boronic 2D material on Au(111)  |
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| <i>Paolo Fantuzzi</i>           | Fabrication of graphene-based molecular junctions  |
| <i>Faustino Martelli</i>        | Ultrafast carrier dynamics in semiconductor nanowires  |

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| <i>Caterina Ricci</i>      | The lipid membrane-amyloid peptide interaction: a neutron scattering study   |
| <i>Alberto Cappellaro</i>  | Equation of state and self-bound droplet in Rabi-coupled Bose mixtures   |
| <i>Alberto Simoncig</i>    | Coherent magnons in antiferromagnetic thin films stimulated by EUV pulses from the seeded free-electron laser FERMI                            |
| <i>Alessio Lerose</i>      | Macroscopic chaos induced by quantum fluctuations near a dynamical phase transition  |
| <i>Angelo Valli</i>        | Size control of charge-orbital order and site-selective Mottness in nanoscopic La-doped Manganites   |
| <i>Damir Kopic</i>         | Time-resolved ARPES studies on high-temperature copper-oxide with VUV probe  |
| <i>Daniele Guerci</i>      | Coexistence of ferromagnetic metals in the Stoner model  |
| <i>Davide Soranzio</i>     | Time-resolved optical studies of the semi-metallic transition metal dichalcogenide WTe <sub>2</sub>  |
| <i>Andrea Ronchi</i>       | Ultrafast switching of metal-oxide heterostructures  |
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| <i>Paolo Franceschini</i>  | LaVO <sub>3</sub> -based heterostructures  |
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| <i>Ruggero Lot</i>         | Accelerating Crystal Structure Prediction with Deep Neural Networks  |
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| <i>Fernando Iemini</i>        | Majorana Quasi-Particles Protected by Z <sub>2</sub> Angular Momentum Conservation   |
| <i>Sergio Ciuchi</i>          | Disorder-Driven Metal-Insulator Transitions in Deformable Lattices   |
| <i>Emma Fenude</i>            | Structural, Conformational, and Dynamical Properties of Repeat Motif in Wheat Gluten Protein.  |
| <i>Prasenjit Prasad Sukul</i> | Photoluminescence studies in Yb <sup>3+</sup> /Er <sup>3+</sup> doped ferroelectric PbZrTiO <sub>3</sub> ceramics on various Tm <sup>3+</sup> concentrations |

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| <i>Lara Gigli</i>           | The high pressure-behavior of the 1-D K-aluminosilicate zeolite L: a synchrotron X-ray powder diffraction study                  |
| <i>Marcello Coreno</i>      | A new XUV beamline for MOlecular Science and Technology: MOST @ Elettra  |
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