



31<sup>st</sup> of August-2<sup>nd</sup> of September 2022

## Recent Trends in Magnetism and Superconductivity

### Program

Wednesday 31.08.2022

**1. Official opening** (9.00-9.20): General Director: Presentation of NIMP and Research directions in Magnetism and Superconductivity.

**M1 Nanoscale magnetism and Spintronics (9.20-11.20); Chairman: Lucian Pintilie (also at 1)**

I1. Daniel E. Bürgler, **Peter Grünberg Institut, Germany**: Spin-dependent hybridization and spin polarization effects at metal-organic interfaces: Ferrocene- and pyrene-based cyclophane chemisorbed on Co(111) nanoislands (9.20 – 9.50)

I2. Florin Radu, **Helmholtz-Zentrum, Berlin, Germany**: Exploring nanoscale magnetism in ferrimagnetic spintronic materials with soft X-ray spectroscopy, scattering, and imaging techniques (9.50 - 10.20)

I3. Samir Lounis, **Institute for Advanced Simulation, Germany**: Spinorbitronics in the nanoworld: a first-principles view on magnetic skyrmions (10.20 – 10.50)

I4. Bogdana Borca, **NIMP, Romania**: Memristive effects in multiferroic metal-organic heterostructures (10.50-11.20)

**11.20-11.40 Coffee Break**

**M2 Nanoscale magnetism and Spintronics (11.40-13.10); Chairman: Lucian Pintilie, NIMP, Romania**

I5. Herman Suderow, **Universidad Autonoma de Madrid, Spain**: Scanning tunneling spectroscopy of quantum critical and topological magnets: The link between electronic band structure and magnetism (on-line) (11.40 - 12.10)

I6. Marius V. Costache **University of Barcelona, Spain**: Trends and opportunities in two-dimensional (2D) materials spintronics (12.10 - 12.40)

I7. Evangelos Papaioannou **Institute of Physics, Martin Luther University, Germany**: Novel broadband and efficient THz radiation sources based on spintronic structures (12.40 - 13.10)

### **13.10-14.20 Lunch**

#### **A1 Superconductivity (14.20-16.20); Chairman: Petre Badica, NIMP, Romania**

I8. Laura Gozzelino **Politecnico di Torino, Italy**: Superconducting and hybrid passive shields for magnetic field mitigation (14.20 - 14.50)

I9. Simon Bending **University of Bath, United Kingdom**: Twisted van der Waals Heterostructure SQUIDs Fabricated by Dry Transfer of 2D Superconductor Flakes (14.50 - 15.20)

I10. Massimiliano Polichetti **University of Salerno, Italy**: The correlation between the second magnetization peak and the magnetic relaxation rate in superconductors (15.20-15.50)

I11. Adrian Crisan **NIMP, Romania**: Pinning potential in superconductors from multi-harmonic AC susceptibility response (15.50-16.20)

### **16.20-16.40 Coffee Break**

#### **A2 Magnetic domains and related magneto-functionalities (16.40-18.10); Chairman: Ovidiu Crisan**

I12. Felicia Tolea **NIMP, Romania**: Multifunctional Ferromagnetic Shape Memory Materials: Magnetocaloric, Magnetoresistive and Temperature Memory Effects (16.40 - 17.10)

I13: Fernando Plazaola **University of the Basque Country**: The role of mechanically induced defects on the magnetic coupling in metamagnetic shape memory alloys (17.10 - 17.40)

I14: Cristian Teodorescu **NIMP, Romania**: Revised Kittel Theory for ferromagnetic domains and further developments (17.40-18.10)

### **Thursday 01.09.2022**

#### **M3 Superconductors (9.00-11.00); Chairman: Adrian Crisan**

I15. Michael Eisterer **TU Wien, Austria**: Influence of fast neutron irradiation on the properties of conventional and high temperature superconductors (9.00-9.30)

I16. Traian Petrisor **Technical University of Cluj Napoca, Romania**: Superconducting transport properties in epitaxial YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>(9.30-10.00)

I17. Petre Badica **NIMP, Romania**: Recent developments of MgB<sub>2</sub> superconductor at National Institute of Materials Physics (10.00 - 10.30)

Y1. Alina Ionescu **NIMP, Romania**: Vortex dynamics in type II superconductors: long time scales relaxation measurements: (10.30-10.45)

Y2. Ion Ivan **NIMP, Romania**: New superconductor/ferromagnet heterostructure formed by  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  and  $\text{CaRuO}_3$  (10.45-11.00)

### **11.00-11.20 Coffee Break**

#### **M4 Nanoscale magnetism and Spintronics (11.20-12.20); Chairman: Victor Kuncser**

I18. Ko Mibu, **Nagoia Institute of Technology, Japan**: Tunneling spin-filtering effect through perpendicularly magnetized Co-ferrite films (on-line) (11.20 - 11.50)

I19. Wolfgang Kuch, **Freie Universität Berlin, Department of Physics, Institute of Experimental Physics, Germany**: Ultrafast spin transfer in layered magneto heterostructures (11.50 - 12.20)

### **12.20-13.20 Visit at NIMP**

### **13.20-14.20 Lunch**

#### **A3 Molecular magnetism and low dimensional systems (14.20-16.20); Chairman: Ionut Enculescu/Andrei Galatanu**

I20. Stefano Sanvito **School of Physics, Trinity College Dublin, Ireland**: Machine learning design of magnets: from molecules to solids (14.20 - 14.50)

I21. Rodolfo Miranda: **Universidad Autonoma de Madrid and IMDEA Nanociencia, Spain** Exploring the Zoo of Layered Quantum Materials (14.50 - 15.20)

I22. Ladislau Vekas **Filiala Academiei Romane- Timisoara**: Ferroluids and Bio-feofluids: synthesis, structure, properties and some applications(15.20-15.50)

I23. Ana Espinosa, **IMDEA Nanociencia, Madrid, Spain**: Magnetic-based particles for biomedical applications (15.50-16.20)

### **16.20-16.40 Coffee Break**

#### **A4 Molecular magnetism and magnetism of low dimensional systems (16.40-18.10); Chairman: Bogdana Borca, NIMP, Romania**

I.24 Thomas Jung, **Paul Scherrer Institute, Switzerland**: The magnetism of surface supported sheets and chains: Emergence of unprecedented properties by supramolecular control (16.40 - 17.10)

I25: Kuncser Victor **NIMP, Romania**: Tuning dimensionality and type of magnetic order by auto-organization of Fe clusters in Fe-Au thin films and related spintronic effects (17.10 - 17.40)

Y3. Marius Husanu **NIMP, Romania**: Spin asymmetry in the 2D electron gas at SrTiO<sub>3</sub>(001) surfaces (17.40 - 17.55)

Y4. Nicoleta Apostol? **NIMP, Romania**: Interplay between spin asymmetry in thin ferromagnetic layers and the ferroelectric polarization orientation of Pb(Zr,Ti)O<sub>3</sub>(001) substrates (17.55-18.10)

**Friday 02.09.2022**

**M5 Intermetallics, nanocomposites and nanomaterials 5 (9.00-10.00); Chairman: Cristian Teodorescu, NIMP, Romania**

I26 Alberto Bollero, **IMDEA Nanociencia, Madrid, Spain**: Nanomagnetism applied to the development of sustainable permanent magnets for energy and transport applications (9.00 – 9.30)

Y5. Ester M. Palmero, **IMDEA Nanociencia, Madrid, Spain**: Developing Rare Earth-free and hybrid permanent magnets: from the syntheses of customized composites to additive manufacturing: (9.30-9.45)

I27. Nicoleta Lupu, **National Institute of R&D for Technical Physics, Iasi, Romania**: provide title) (9.45-10.15)

I28. Ovidiu Crisan, **NIMP, Romania**: Additive-induced phase stabilization in RE-free nanocomposite magnets (10.15 - 10.45)

Lucian Pintilie, Final Remarks (10.45-10.50)

**10.50-11.10 Coffee Break**

**11.10-12.00: Discussions on possible collaborations**

**12.00-13.00 Lunch and Departure**

**Posters :**

Claudiu Locovei **NIMP, Romania**: Magneto-functionities in Fe-Gd ferrimagnetic thin films close to the compensation point (9.45-10.00)

Anda Stanciu, **NIMP, Romania**: Electrical-Magneto-chiral effect in ferromagnetic micro-coils

Mihaela Sofronie, **NIMP, Romania**: .....