MultiSuper 2023 – Scientific Program

27 INVITED TALKS - Timeline of each talk: 25’ talk, 5’ discussion

European Central Time zone (Italian time), GMT +2

Friday 8 September

13:00-14:30 Welcome reception with light lunch

14:30-15:00 Opening

Graziano Leoni, Rector Elected of the University of Camerino, Italy

Opening address by the Scientific Committee of MultiSuper 2023:

Milorad V. Milošević, University of Antwerp, Belgium

Andrea Perali, University of Camerino, Italy

Roberta Citro, University of Salerno, Italy

David Neilson, University of Antwerp, Belgium and FLEET, Australia

15:00-15:30: Roberta Citro, University of Salerno, Italy
A novel platform for topological superconductivity in multiband and multiorbital systems

15:30-16:00: Yukio Hasegawa, University of Tokyo, Japan
2D superconductivity vs. disorder: Pb monolayer superconductors formed on vicinal Si(111) substrates

16:00-16:30: Jonas Bekaert, University of Antwerp, Belgium
The road to superconducting MXenes

16:30-17:00 – Coffee Break

17:00-17:30: Dario Daghero, Politecnico di Torino, Italy
Protonation-induced superconductivity in 1T-TiSe 2

17:30-18:00: Tommaso Confalone, Leibniz Institute for Solid State and Materials Research, Dresden, Germany
Twisted cuprate van der Waals heterostructures with controlled Josephson coupling

18:00-18:30: Stefano Lupi, "Sapienza" University of Rome and INFN, section of Rome, Italy
The Electrodynamics Properties of Superconducting Nd0.8Sr0.2NiO2 Nickelate

18:30-19:00: Patric Holmvall, Uppsala University, Sweden
Robust and tunable coreless vortices and fractional vortices as direct signature of chiral d-wave superconductivity

Saturday 9 September

09:30-10:00: Sergio Caprara, “Sapienza” University of Rome, Italy
Competition between superconductivity and charge order in cuprates: a thermodynamic phase diagram

10:00-10:30: Antonio Bianconi, RICMASS, Rome, Italy
Engeenering new artificial high-T_c superlattices tuned at the Fano-Feshbach resonance by quantum design

10:30-11:00: Massimo Capone, SISSA, Trieste, Italy [*online talk*]
Electron-boson coupling in multiorbital quantum materials

11:00-11:30 – Coffee Break

11:30-12:00: Christopher Vale, ARC-FLEET, Swinburne University of Technology, Melbourne, Australia [*online talk*]
Amplitude oscillations in ultracold Fermi gases

12:00-12:30: Tasakada Shibauchi, University of Tokyo, Japan
Unusual BCS-BEC crossover and exotic superconducting states in FeSe-based materials

12:30-13:00: Andrii Kuibarov, Leibniz Institute for Solid State and Materials Research, Dresden, Germany
Superconducting arcs in PtBi2

13:00-15:00 – Lunch Break

15:00-15:30: Luca Salasnich, University of Padova, Italy
Shell-shaped Bose-Einstein condensates

15:30-16:00: Jordi Boronat, Technical University of Catalonia, Barcelona, Spain
Liquid and solid phases of dipolar atoms in a multilayer

16:00-16:30: Serghei Klimin, TQC, University of Antwerp, Belgium
Low-lying collective excitations of superconductors and charged Fermi superfluids in the BCS-BEC crossover

16:30-17:00: Leonardo Pisani, University of Camerino, Italy
Josephson effect and Landau critical velocity in the BCS-BEC crossover

17:00-18:30 Poster session with drinks and snacks.

Poster presenters:

Alice Bellettini, Politecnico di Torino, Italy
Relative dynamics of quantum vortices and massive cores in binary BECs [also presented as a talk]

Giovanni Midei, University of Camerino, Italy.
Giant amplification of Berezinskii-Kosterlitz-Thouless transition temperature in superconducting systems characterized by cooperative interplay of small-gapped valence and conduction bands

Filippo Pascucci, University of Antwerp, Belgium and University of Camerino, Italy (joint doctorate)
Poster 1: *Josephson effect and superfluidity in electron-hole bilayer heterostructures*

Poster 2: *Intralayer correlations in electron-hole bilayers superfludity*

Meenakshi Sharma, University of Camerino, Italy.
Experimental study of Berezinskii-KosterlitzThouless (BKT) transition under applied magnetic field in NbN ultra-thin films.

Ionel Tifrea, California State University Fullerton, USA.
Superconducting state properties of iron based materials using a two-band BCS model

Mattia Trama, University of Salerno, Italy.
Non-trivial topology and diode effect in Josephson junctions based on oxide nanochannels

Victor Velasco, Universidade Federal do Rio de Janeiro, Brazil.
Polarons Physics in Complex Superconducting Systems

20:00 Conference dinner in San Benedetto del Tronto

Sunday 10 September

10:30-11:00: Gianni Profeta, *Unveiling the pairing symmetry of the superconducting Sn/Si(111) via angle-resolved THz pump spectroscopy*

11:00-11:30: Claudio Guarcello, University of Salerno, Italy
Thermoelectric signatures of order-parameter symmetries in iron-based superconducting tunnel junctions

11:30-12:00: Sathish Kumar Paramavisam, Universities of Antwerp, Belgium and Camerino, Italy – Joint doctorate
High-Tc BKT superconducting transition in 2D systems with coupled deep and quasi-flat electronic bands with van Hove singularities

12:00-12:30: Hiroyuki Tajima, University of Tokyo, Japan
Multi-component Quantum Gases in Ultracold Atoms, Condensed Matter, and Nuclear Systems

12:30-13:00 Bilal Tanatar, Bilkent University, Turkey
Density and pseudo-spin rotons in a bilayer of soft-core bosons

13:00-15:00 – Lunch Break

15:00-15:30: Davide Valentinis, Karlsruhe Institute of Technology (KIT), Germany
Fermi-liquid to non-Fermi liquid crossovers in the superconducting Yukawa-SYK model on a lattice

15:30-16:00: Andrea Richaud, Universitat Politecnica de Catalunya, Barcelona, Spain
Making ghost vortices visible in two-component Bose-Einstein condensates

16:00-16:30: Alice Bellettini, Politecnico di Torino, Italy
Relative dynamics of quantum vortices and massive cores in binary BECs

16:30-17:00 – Coffee Break

17:00-17:30: Milorad V. Milošević, University of Antwerp, Belgium
Vortex matter in multicomponent superconductors

17:30-18:00: Andrea Perali, University of Camerino, Italy
Screening of pair fluctuations in multiband superconductors: a mechanism to stabilize higher-Tc superconductivity

18:00-18:30: **Closing remarks and Condensed Matter Awards**