

## SuperFluctuations 2022 – Scientific Program

**Timeline of each talk: 25' talk, 3' discussion.**

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

### Wednesday 6 July

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

#### 14:00-14:30 Opening

Flavio Seno, Director of Dep. of Physics and Astronomy “Galileo Galilei”, University of Padova, Italy

David Vitali, Director of the School of Science and Technology, University of Camerino, Italy  
Yasutomo Uemura, Columbia University, USA

14:30-15:00: Jordi Boronat, Universitat Politècnica de Catalunya, Barcelona, Spain  
*Superfluidity in ordered phases*

15:00-15:30: Antun Balaz, Institute of Physics Belgrade, Serbia  
*Stability of quantum degenerate fermionic polar molecules with and without microwave shielding*

15:30-16:00: Francesco Minardi, University of Bologna, Italy  
*Collective oscillations of an atomic Bose-Bose mixture*

16:00-16:30: Carlos Sa de Melo, Georgia Institute of Technology, USA (**online talk**)  
*Density induced BCS-Bose evolution in gated two-dimensional superconductors: The role of the interaction-range in the Berezinskii-Kosterlitz-Thouless transition*

#### 16:30-17:00 – Coffee Break

17:00-17:30: Sergio Caprara, “Sapienza” University of Rome, Italy  
*Filamentary superconductivity in systems with competing charge density waves*

17:30-18:00: Steve Conradson, Washington State University, USA  
*Saturation of the Superconductivity in  $p > 0.5$  Cuprates: A Novel Mechanism*

18:00-18:30: Laura Fanfarillo, Department of Physics, University of Florida, USA  
*Pair-Density Wave in anisotropic strongly coupled pairing systems*

18:30-19:00: Alessandro De Martino, City, University of London, UK  
*Phonon-limited transport and Fermi arc lifetime in Weyl semimetals*

**19:15 Visit to the Museum of Physics “Giovanni Poleni”**

## Thursday 7 July

09:00-09:30: Massimo Capone, SISSA, Italy

*Multi-component Mott systems: (A little) more is different*

09:30-10:00: Pierbiagio Pieri, University of Bologna, Italy

*Evolution of an attractive polarized Fermi gas from the polaronic limit to the superfluid quantum critical point*

10:00-10:30: Matija Čulo, Institute of Physics, Zagreb, Croatia

*Anomalous normal and superconducting states in the nematic  $\text{FeSe}_{1-x}\text{S}_x$*

10:30-11:00: Antonio Bianconi, RICMASS, Rome, Italy

*Multigap superconductivity and shape resonances in superconducting heterostructures with spin-orbit coupling*

### 11:00-11:30 – Coffee Break

11:30-12:00: Nicola Lo Gullo, VTT - Finland

*HELM1: a superconducting quantum computer*

12:00-12:30: Giacomo Bighin, University of Heidelberg, Germany

*An impurity in a heteronuclear two-component Bose mixture*

12:30-13:00: Andrea Richaud, SISSA, Trieste, Italy

*Dynamics of massive point vortices in a binary mixture of Bose-Einstein condensates*

13:00-13:30: Ivan Morera-Navarro, Universitat de Barcelona, Spain

*Superexchange liquefaction of strongly correlated lattice dipolar bosons*

### 13:30-15:00 – Lunch Break

15:00-15:30: Doug Natelson, Rice University, USA ([online talk](#))

*Shot noise indicating pairing at temperatures above  $T_c$  and energies above the gap in LSCO*

15:30-16:00: Kin-Fai Mak, Cornell University, USA ([online talk](#))

*Excitonic insulators in Coulomb-coupled atomic bilayers*

16:00-16:30: Sara Conti, University of Antwerp, Belgium and FLEET, Australia

*Chester supersolid of spatially indirect excitons in double-layer semiconductor heterostructures*

16:30-17:00: Stefania De Palo, University of Trieste, Italy

*Excitonic condensation, pairing gap and quadri-excitons in an electron-hole bilayer with twofold valley degeneracy*

17:00-17:30: Thereza Paiva, Univ. Federal do Rio de Janeiro, Brazil ([online talk](#))

*Dimensional crossover in the three-dimensional attractive Hubbard model*

### 17:30-19:15 Coffee Break + Poster session and video talks discussion

**20:00 Conference dinner at “Isola di Caprera” Restaurant**

## Friday 8 June

09:00-09:30: Gaetano Senatore, University of Trieste, Italy

*Collective excitations and quantum incompressibility in electron-hole fluids*

09:30-10:00: Sergei Klimin, University of Antwerp, Belgium

*Collective excitations of a Fermi superfluid in the BCS-BEC crossover*

10:00-10:30: Francesco Ancilotto, University of Padova, Italy

*Spinning superfluid droplets*

10:30-11:00: Kazushi Kanoda, University of Tokyo, Japan ([online talk](#))

*Mott-Driven BEC-BCS Crossover in a Doped Spin Liquid Candidate*

### 11:00-11:30 Break

11:30-12:00: Andrea Tononi, University of Paris Saclay, France

*How many heavy fermions can be bound by a single light atom in 1D?*

12:00-12:30: Axel Pelster, University of Kaiserslautern, Germany

*On the Theoretical Description of Photon Bose-Einstein Condensates*

12:30-13:00: Roberta Citro, University of Salerno, Italy

*Formation and fate of quantum droplets in a quasi-1D dipolar Bose gas*

13:00-13:30: Luciano Pietronero, CREF, Centro Ric. Enrico Fermi, Rome, Italy ([online talk](#))

*Hydrides Superconductors in the Uemura diagram and the possible role of Nonadiabatic Superconductivity*

### 13:30-15:00 – Lunch Break

15:00-15:30: Pieralberto Marchetti, University of Padova, Italy

*A FL\* Solution to the FL/NFL Dichotomy in hole-doped Cuprates*

15:30-16:00: Koichiro Furutani, University of Padova, Italy

*Quantum Correction to Josephson Oscillations*

16:00-16:30: Andrea Perali, University of Camerino, Italy

*The Camerino-Padova collaboration: Fluctuation phenomena in multicomponent superconductors and superfluids*

16:30-17:00: Yasutomo Uemura, Columbia University, USA, ([online talk](#))

*TBA*

### 17:00-17:30 – Coffee Break + Closing Remarks