

SUPERFLUCTUATIONS 2019
Conference Programme – 2-4 September 2019

Monday – Sept. 2 [Archivio Antico – Main University Building “Palazzo Bo”]

12:30 Registration and welcome reception

14:00 - 14:30 Opening and Introduction

14:30 – 15:00 Antonio Bianconi, RICMASS, Rome, Italy.

Topological multigap superconductivity in quantum complex matter showing quantum criticality near Lifshitz transitions.

15:00 – 15:30 Massimo Capone, SISSA, Trieste, Italy.

Superconductivity in bad metals: Hund’s driven correlations and boson-mediated pairing.

15:30 – 16:00 Pieralberto Marchetti, University of Padova, Italy.

Charge carriers with $\frac{1}{2}$ exclusion statistics in the high T_c cuprates.

16:00 – 16:30 Michele Pini, University of Camerino and University of Florence, Italy.

Pair correlations in the normal phase of an attractive Fermi gas.

16:30 – 17:00 COFFEE BREAK

17:00 – 17:30 Simone Montangero, University of Padova, Italy.

Quantum technologies on Rydberg atoms.

17:30 – 18:00 Serghei Klimin, TQC, University of Antwerp, Belgium.

Collective excitations in one- and two-band superfluid Fermi gases.

18:00 – 18:30 Alessio Recati, University of Trento and INO-CNR BEC Center, Italy.

Coherently Coupled Bose gases: from sine-Gordon soliton to Goldstone mode breaking.

19:30 SOCIAL SPRITZ AT CAFFE’ PEDROCCHI

Tuesday – Sept. 3 [Aula Rostagni – Department of Physics and Astronomy “Galileo Galilei”]

09:00 – 09:30 Maria Luisa Chiofalo, University of Pisa, Italy.

Universality and Fluctuations in the BCS-BEC Crossover for quantum gases with narrow-to-broad Fano-Feshbach resonances.

09:30 – 10:00 Hiroyuki Tajima, RIKEN Nishina Center, Wako, Saitama, Japan.

BCS-BEC crossover and pairing fluctuations in a two-band superfluid/superconductor.

10:00 – 10:30 Sara Conti, University of Antwerp, Belgium and University of Camerino, Italy.

Multicomponent electron-hole superfluidity in coupled layer systems.

10:30 – 11:00 COFFEE BREAK

11:00 – 11:30 Alessandro De Martino, Department of Mathematics, City, University of London, United Kingdom.

Superconductivity from piezoelectric interactions in Weyl semimetals.

11:30 – 12:00 Roberto Raimondi, University of Roma Tre, Italy.

Nonlinear sigma-model approach to the coupled spin-charge dynamics in the presence of Rashba spin-orbit coupling.

12:00 – 12:30 Carlos A. R. Sá de Melo, Georgia Institute of Technology, Atlanta, USA.

Unconventional color superfluidity without quarks: Ultra-cold fermions in the presence of color orbit and color-flip fields.

12:30 – 13:00 Giacomo Bighin, IST - Institute for Science and Technology, Klosterneuburg, Austria.

Far-from-equilibrium dynamics of molecules in ^4He nanodroplets: a quasiparticle perspective.

13:00 – 15:00 LUNCH

15:00 – 15:30 Franco Dalfovo, University of Trento, Italy.

Quench Dynamics and sound waves of an Ultracold 2D Bose Gas.

15:30 – 16:00 Alessia Burchianti, CNR-INO, Florence, Italy.

Observation of two-species quantum droplets in a Bose-Bose mixture.

16:00 – 16:30 Roberta Citro, University of Salerno, Italy.

Meissner to vortex phase transition of spin-orbit coupled bosons in low dimensions.

16:30 – 17:00 COFFEE BREAK

17:00 – 17:30 Boris Malomed, University of Tel Aviv, Israel (Skype talk).

Gap solitons in binary condensates.

17:30 – 18:00 Yuriy Yerin, University of Camerino, Italy.

Coexistence of giant Cooper pairs and bosonic condensate and anomalous behavior of energy gaps in the BCS-BEC crossover in a two-band superfluid Fermi gas.

18:00 – 18:15 Miki Ota, CNR-INO BEC Center and University of Trento, Italy.

Beyond mean-field theory for binary mixtures of Bose-Einstein condensates at finite temperature.

18:15 – 19:15 POSTER SESSION and SPONSOR EXHIBITION

Sponsors: Condensed Matter (MDPI), Leiden Cryogenics

20:00 SOCIAL DINNER AT RISTORANTE ZAIRO

Wednesday – Sept. 4 [Aula Rostagni – Department of Physics and Astronomy “G. Galilei”]

09:00 – 09:30 Giuseppe Carleo, Simons Foundation, New York, USA.
Neural-Network quantum states.

09:30 – 10:00 Sebastiano Pilati, University of Camerino, Italy.
Machine learning ground-state energies and many-body wave functions.

10:00 – 10:30 Vittorio Penna, Politecnico di Torino, Italy.
Formation of supermixed states in ultracold boson mixtures loaded in ring lattices.

10:30 – 11:00 COFFEE BREAK

11:00 – 11:30 Patrizia Vignolo, Institut de Physique de Nice, France.
Scaling properties of the Tan's contact: from two to infinity.

11:30 – 12:00 Tomasz Sowinski, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland.
Inter-component correlations in one-dimensional mass-imbalanced ultra-cold few-fermion mixtures.

12:00 – 12:30 Stefano Lupi, “Sapienza” Università di Roma, Italy.
Sound and Light in 3D Graphene.

12:30 – 13:00 Antun Balaz, Institute of Physics, Belgrade, Serbia.
Stability of quantum degenerate Fermi gases of tilted polar molecules.

13:00 – 15:00 LUNCH

15:00 – 15:30 Tommaso Macrì, Universidade Federal do Rio Grande do Norte, Natal, Brazil.
Superfluids and quasicrystals with nonlocal interactions.

15:30 – 16:00 Bruno Julia-Diaz, University of Barcelona, Spain.
Entanglement entropy in low-energy non-relativistic field theory descriptions.

16:00 – 16:30 Alberto Parola, Università dell'Insubria, Italy.
Analogue Hawking radiation in BECs.

16:30 – 17:00 Sandro Wimberger, University of Parma, Italy
Accelerating adiabatic state transfer with high-frequency drivings.

17:00 – 17:30 Andrea Trombettoni, SISSA, Italy.
Integrable Floquet Hamiltonian for a Periodically Tilted 1D Gas.

**17:30 – 17:45 CLOSING AND ANNOUNCEMENT OF THE RECIPIENT OF THE MDPI
CONDENSED MATTER AWARD**

POSTER SESSION

Alberto Cappellaro, University of Padova, Italy.

Collisionless dynamics in two-dimensional Bose gases.

Marco Faccioli, University of Padova, Italy.

Gaussian quantum fluctuations in the superfluid–Mott-insulator phase transition.

Koichiro Furutani, Keio University, Japan.

Strong-coupling Effects on Transport Properties of an Ultracold Fermi Gas.

Alberto Gallemi, INO-CNR BEC Center, INFN, and Dip. di Fisica, Univ. Trento, Italy.

Collisions between Self-Bound Quantum Droplets.

Benjamin McNaughton, University of Antwerp, Belgium and University of Camerino, Italy.

Tuning and Control of Vortex Configurations in Superconducting Nanostripes.

Francesco Minardi, LENS, Florence, Italy.

Effective expression of the Lee-Huang-Yang energy functional for heteronuclear mixtures.

Miki Ota, CNR-INO BEC Center and University of Trento, Italy.

Beyond mean-field theory for binary mixtures of Bose-Einstein condensates at finite temperature.

Santo Rocuzzo, CNR-INO and University of Trento, Italy.

Supersolid symmetry breaking from compressional oscillations in a dipolar quantum gas.

Donato Romito, CNR-BEC, Trento, Italy and University of Southampton, United Kingdom.

Linear response study of collisionless drag in quantum fluids.

Bilal Tanatar, Bilkent University, Ankara, Turkey.

Ground-state properties and strong correlation effects in Rydberg-dressed Bose gases.

Antonio Tiene, Universidad Autonoma de Madrid, Spain.

Imbalanced electron-hole-photon systems in two-dimensional structures.

Andrea Tononi, University of Padova, Italy.

Quantum solitons in one-dimensional spin-orbit coupled Bose-Bose mixtures.

Wout Van Alphen, University of Antwerp, Belgium.
Solitons in superfluid Fermi gases.

Senne Van Loon, University of Antwerp, Belgium.
The fermionic branch of a superfluid Fermi gas and its coupling to the collective mode.