PAlaiseau Florence workshop on ULTRACOLD ATOMS

Scientific program and title of the talks

Tuesday April 19th 2022 (Villa la Stella, Firenze)

Quantum Mixtures

14:00 **Luca Cavicchioli** (LENS)
Quantum mixtures with tunable interactions

14:30 **Thomas Bourdel** (Institut d'Optique)
Interactions in coupled two-component Bose-Einstein condensates

15:00 **Alessio Ciamei** (CNR-INO)
Resonantly interacting Fermi mixtures of Li6 and Cr53 atoms

15:30 *Coffee break*

Light and Matter Waves

16:00 **Shamaila Manzoor** (University of Florence)
Prospects for a simultaneous atom interferometer using ultracold atomic sources of cadmium and strontium

16:30 **Giovanni Ferioli** (Institut d'Optique)
Observation of superradint phase transition in free space

17:00 **Tommaso Petrucciani** (LENS)
Atom Interferometry with atomic BECs trapped in beat-note superlattices

17:30 **Yukun Guo** (Institut d'Optique)
Towards 3D study of Anderson localization

18:00 *Free time for discussions*

Wednesday April 20th 2022 (Villa la Stella, Firenze)

Out-of-equilibrium Quantum Physics

9:00 **Isabelle Bouchoule** (Institut d'Optique)
Relaxation of phonons and re-fermionization in the Lieb-Liniger gas

9:30 **Beatrice Donelli** (CNR-INO & LENS)
Self-induced Josephson junction in a supersolid dipolar quantum gas

10:00 **Romaric Journet** (Institut d'Optique)
Building a strontium quantum gas microscope to study out-of-equilibrium dynamics

10:30 *Coffee break*

Dipolar Interactions

11:00 **Giulio Biagioni** (University of Florence)
Exploring the supersolid phase of matter with a dipolar quantum gas

11:30 **Guillaume Bornet** (Institut d'Optique)
Realizion of a quantum XY ferromagnet and an antiferromagnet in a two-dimensional square Rydberg-atom array

12:00 **Ettore Canonici** (University of Florence)
ML-based noise benchmarking of Pasqal quantum processor

12:30 *Lunch break*

Quantum Correlated Matter 1

14:00 **Gaétan Hercé** (Institut d'Optique)
Observation of Bogoliubov pairs in interacting Bose gases

14:30 **Woo Jin Kwon** (CNR-INO & LENS)
Sound emission and vortex annihilation in a superfluid vortex collider

15:00 **Vladislav Gavryusev** (University of Florence)
A new setup for quantum simulation with ultracold Strontium atoms in optical tweezers

15:20 **Damien Bloch** (Institut d'Optique)
A source of cold dysprosium atoms for an optical tweezer experiment

15:40 *Coffee break*

Free time for discussions

Thursday April 21st 2022 (Villa la Stella, Firenze)

Entanglement and Metrology

9:00 **Gunjan Verma** (LENS)
Atom Interferometry with Squeezed Momentum States

9:30 **Quentin Marolleau** (Institut d'Optique)
Probing entanglement with ultra-cold helium: dynamical Casimir effect and Bell's inequalities violation

10:00 **Santiago Hernández Gómez** (LENS)
Optimal control of a spin qubit for quantum sensing

10:30 *Coffee break*

Quantum Technologies

11:00 **Ivana Mastroserio** (LENS)
Realizing quantum protocols with an atom-chip for quantum technologies applications

11:30 **Kai-Niklas Schymik** (Institut d'Optique)
Scaling-up the Tweezer Platform - Trapping Arrays of Single Atoms in a Cryogenic Environment

12:00 **Lucia Duca** (INRIM & LENS)
Ion trapping at LENS

12:30 *Lunch break*

Quantum Correlated Matter 2

14:00 Tianwei Zhou (University of Florence)
Observation of Universal Hall Response in Strongly Interacting Fermions

14:30 Andrea Tononi (LPTMS)
Scattering theory and equation of state of a spherical 2D Bose gas

15:00 Jan Schneider (CPHT, Ecole Polytechnique)
Strongly-Correlated Bosons in Optical Quasicrystals

15:30 *Coffee break*

16:00 **Poster Session**

21:00 **Conference Dinner**

Friday April 22nd 2022 (LENS, Sesto Fiorentino)

9:30 *Transfer from Villa la Stella to LENS*

10:30 **Visit to LENS laboratories**

12:30 *Lunch and departure*