IV School on Light and Cold Atoms

October 20 – 31, 2025

ICTP-SAIFR, São Paulo, Brazil

Venue: ICTP-SAIFR/IFT-UNESP
Zoom ID: 843 3376 6175
Password: cold

https://www.ictp-saifr.org/slca2025/

- **Farias Vasconcelos, Joao Lucas** (Instituto de Física de São Carlos, Brazil): *Effects of Low Dimensionality and Curvature on Superfluid Mixtures*

Given the new techniques for the experimental production of ultracold gas mixtures consisting of fermionic and bosonic dipolar components, in a variety of confinement geometries, in this work we will explore the quantum phases of a system composed of a two-dimensional degenerate dipolar Fermi gas. We will consider corrections beyond the mean-field approximation in order to better characterize the system's phases, which will be subject to a bath composed of a three-dimensional condensed bosonic gas. In addition to the effects of the interaction mediated by the bath, we will also analyze the potential of the dipolar interaction between the fermions in different confinement geometries: a single plane, two planes with variable distance, and a spherical film. Our results will be fundamental for shedding light on an area that is still scarcely explored from a theoretical perspective, but whose experimental techniques already allow the implementation and analysis of the system proposed in this project.