

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

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Additional Information

- **Pietro, Lucas Balan** (IFSC-USP, Brazil): *Dynamics of the evaporative cooling mechanism in a crossed optical dipole trap with tunable interactions*

In this scientific initiation project, we propose to study the dynamics of the evaporative cooling process towards Bose-Einstein condensation in a potassium-39 atomic cloud trapped in a crossed optical trap. Using the Feshbach resonance technique capable of changing the atomic interaction of potassium-39 atoms, it will be possible to explore the competition between the increase in two-body collision rates, responsible for the thermalization of the atomic cloud, and the three-body losses in order to find the best experimental route for our experiment. In addition to the experimental work, the student will seek to develop models that simulate the dynamics of cooling and losses for our case. It is worth mentioning that this scholarship is a continuation of a project already carried out by the student during the year 2024 (Process: 2024/04325-6 – budget item of the PI project Process: 2022/02709-6), in which he developed the crossed optical trap in question and participated in the optimization of atomic trapping.