

Postdoc position in AMO physics

Project title

Guided matter-wave atom chip interferometer

A funded post-doc position is currently available in the GyrAChip project of the Atom Interferometry and Inertial Sensors team (<https://syrtte.obspm.fr/spip/science/iaci/?lang=en>) at SYRTE laboratory in Paris. We are looking for an early-stage researcher to work on the instrumental development of a mobile atom-chip gyro/accelerometer for inertial navigation applications. The research is to be conducted on an existing experiment (syrtte.obspm.fr/Web_OnACIS/). Presently, we are exploring in this experiment the coherence guiding of ultra-cold atoms. The aim of this study being the characterization of the potential roughness of microfabricated wires.

The first atom interferometer geometry that will be studied is designed for rotation sensing. In this configuration, a cloud of ultra-cold ^{87}Rb atoms will be coherently split and constrained to propagate along a circular magnetic guide of a few millimeters radius. At the output of the guide an interference signal sensitive to rotation via the Sagnac effect will be measured. In this experiment we will address several challenging tasks such as, coherent matter-wave propagation along a magnetic guide, controlled on-chip coherent beam splitting, and large momentum transfer techniques.

To manipulate the atoms and realize the interferometer, we have installed in the experiment a Bragg laser system. The phase noise of the Bragg laser has been preliminary characterized. The hired candidate will initially work on the optimization and fully characterization of this tool. The next step will be the fine alignment of the beam on the atoms trapped in our magnetic guide. Then, implement the interferometer sequence and demonstrate the inertial sensitivity of the device. The selected candidate will also participate on the atom chip design (and fabrication), supported by microelectronics engineers working in the on-site clean room facilities in Paris Observatory.

The position is based on a full-time employment. The interested candidate should address a CV, a motivation letter and reference letters to Dr. Carlos L. Garrido Alzar (carlos.garrido@obspm.fr).

Eligibility: EU citizens

Profile of candidates: We are looking for outstanding candidates, preferably with experience in any of the following fields: cold atoms; atom chips; quantum optics; quantum information. Fluent in English, knowledge of French would be an asset. Used to autonomous work as well as part of a team, with analytical and interdisciplinary thinking.

Application deadline: None

Job starting date: As soon as possible