

Postdoctoral position at SYRTE
“Atom Interferometry and Inertial Sensors” Team
Quantum Control for Atom Interferometry

The post-doctoral researcher will coordinate the activities carried out by the team in the framework of a new ANR project called "CoQuIA" (Quantum Control for Atomic Interferometry) funded by AID. He will work on both the experimental and theoretical study of methods for shaping laser beams of atomic interferometers, based on the use of unconventional optical elements and optimal quantum control methods. On the theory side, he will continue the development already started in the team of optimal control simulation codes based on gradient methods. On the experimental side, he will use a test bench to test different methods of fast modulation of pulse parameters (phase/frequency, amplitude). Once the methodology is validated, both on the theoretical and experimental sides, he will implement these methods in inertial sensors at the state of the art, and in particular in an atomic gyrometer of very large area and an atomic gradiometer of very high sensitivity, both operational today, with the aim of improving the efficiency of separators, the contrast of interferometers and therefore ultimately the sensitivity of measurements of rotation speed and gravity gradient. He will compare the results obtained with the numerical simulations.

The post-doctoral researcher will join the “Atomic interferometry and inertial sensors” team at SYRTE, a leading laboratory in the development of high sensitivity inertial sensors based on atomic interferometry, such as gravimeters and gyrometers, using cold atoms trapped or in free fall. He will work under the direction of Franck Pereira dos Santos, Research Director at CNRS, team leader at SYRTE and coordinator of the CoQuIA project. He will coordinate the implementation of these new methods in the laboratory, in collaboration with the teams working on the different experimental setups.

Start date: Early 2021, as soon as possible

Profile: The candidate should hold a PhD in physics and have strong experimental skills in laser physics, atomic physics, electronics and instrument control. Research experience in the field of cold atoms is mandatory. Any experience in the field of atomic interferometry will be highly appreciated. An expertise and a taste for modeling and simulations will be an asset.

Nationality: EU or Swiss citizenship mandatory

Contact: Send CV, publication list, motivation letter and references to the project leader, Franck Pereira dos Santos, franck.pereira@obspm.fr