



PhD position / Atoms physics, fibre-photonics, cold atoms and lasers

Organisation: University of LIMOGES

Research Field: Atom optics and photonics

Application deadline: November 30, 2021

Offer starting date : 01/04/2022

Responsible to: Prof. Fetah Benabid

Location: Xlim Institute

123, avenue Albert Thomas, Limoges 87060, France

Type of contract : Temporary

Job status : Full-time

EU research framework : H2020 / FETOPEN

Job description:

To undertake a PhD research project in a multi-disciplinary field at the frontier of atoms physics, fibre-photonics, cold atoms and lasers. The PhD project aims to demonstrate superradiance in cold rubidium confined in a hollow core photonic crystal fiber, and assess it for the development of ultra-stable laser source. The research program requires (i) micro-confining and laser cooling rubidium atom inside the core of a hollow core fiber, (ii) exploring cooperative effects and (iii) generation and characterization of superradiance. The project is part of the FETOPEN project CRYST³ funded by the European Research Council.

The PhD work will be undertaken at the Gas-Phase Photonic and Microwave Materials group (GPPMM) at Xlim CNRS research Institute, University of Limoges, France. The GPPMM is world-renowned research group for its mix of experimental and theoretical investigations into new hollow-core photonic crystal fibres (HC-PCF) and their applications in nonlinear and quantum optics

applications. The group works in an inventive and highly interactive environment, with internal interactions being complemented by active international collaborations. Limoges is a pleasant and attractive city in the west-central France, close to Bordeaux and just 2½ hours by train from Paris.

Duties and Responsibilities:

1. To work with others in the Gas-Phase Photonic and Microwave Materials group to design, fabricate and characterise hollow-core photonic crystal fibres (HCPCF) tailored for atom and cold atom optics.
2. To work on optical experiments involving cold atom, HCPCF and signal processing.
3. To prepare written reports for the project, to attend project meetings, and to interact with other parties involved in the project.
4. To prepare scientific papers for publication, both in international journals and at conferences. To attend conferences in order to present the results of research and to interact with the broader scientific community.
5. To work on related scientific projects as required
6. To report on a regular basis to the project investigator.

The prospective PhD student should have a background in one or more of the following: fibre photonics, nonlinear and quantum optics, atom optics and laser metrology. Duration of appointment: 3 years. Salary: ~ 1500€/month including superannuation.

For more information on the position and application please contact Prof Fetah Benabid (f.benabid@xlim.fr), in Cc benoit.debord@xlim.fr, send CV and motivation letter.

Skills/Qualifications:

- REQUIRED LANGUAGES : ENGLISH: Excellent, FRENCH : Desired
- QUALIFICATIONS : Master or equivalent level in physics, optics or photonics-related discipline
- EXPERIENCES/KNOWLEDGE :
 - Experimental optics
 - Optical fibres
 - Laser metrology
 - Atom optics

- SKILLS :

Time management

Team work

Scientific writing

- ATTRIBUTES:

Team worker

Motivated

Hard worker

Initiative

Ability to communicate