LABORATOIRE INTERACTIONS, DYNAMIQUES et LASERS
EMR9000 CEA, CNRS, Université Paris-Saclay

Postdoc position (2 years) opened at CEA-Saclay (Paris, France)

Experimental Attosecond Spectroscopy of Magnetic Materials

Scientific project

Attosecond science is getting to its maturity with a series of emerging applications ranging from very fundamental tests of quantum mechanics, to the monitoring of complex processes in atoms, molecules and solids at ultimate time scales. Our lab, which paved the way to this new era, is now focusing on next generation investigations. For this, we developed a facility with state-of-the-art equipment dedicated to the forefront research on ultimate dynamics, allowing many complementary experimental approaches. The postdoctoral scholar, who will have full access to this facility, will investigate ultrafast dynamics of magnetic materials, along two research lines. 1) The observation of the direct coupling of intense light electric field to spins in a magnetic material, which is a current frontier of knowledge. The successful applicant will mainly use transient absorption spectroscopy with single attosecond pulses in the loose focusing regime. 2) The exploration of new coupling schemes between structured light beams and magnetic textures, in the strong focusing regime. Each research axis involves specific developments of attosecond light sources, to prepare them with tailored angular momenta. Within this research line, we will accompany any suggestions and promote independent thinking and novel ideas. The postdoctoral researcher will be given ample opportunity to gather expertise and exposure, in order to prepare for the next step of their scientific career. They will be encouraged to lead projects, mentor students and participate in proposal writings. This position is fully funded through the ANR HELIMAG and the ERC-StG Spinfield.

In a nutshell

Environment

- Our lab is operating the ATTOLab facility, bringing together teams with state of the art expertise in intense femtosecond lasers, attophysics, condensed matter and gas phase physics.
- New state-of-the art laboratory inaugurated in 2016
- Three femtosecond/attosecond beamlines fully equipped for transient absorption spectroscopy, and charged particle detection.
- Team of 10-15 persons with a high level of laser and technical support.
- Main lab located in CEA-Saclay (Paris region). High concentration of scientists and a lot to enjoy!

Your qualifications

- Capabilities to work in a team/good communication skills, creativity, leadership and autonomy
- Hands on experimental tasks; expertise in some of the following: attosecond physics, XUV/X-ray light, condensed matter spectroscopy
- Candidates must hold a PhD degree on the day of their hiring

Benefits

- Salary determined from experience (>2200€/month after taxes for a new doctor)
- Health, pension and unemployment securities included
- Benefits from CEA (help with housing, sports, holiday's discounts, public transport discount…)

References

M. Luttmann et al., Science Advances, 9, eadf3486 (2023)

D. Bresteau et al., 10.1140/epjs/s11734-022-00752-x

M. Fanciulli et al., Phys. Rev. Lett., 128, 077401 (2022)

R. Géneaux et al., Phys. Rev. Lett., 124, 207401 (2020)

C. Bourassin-Bouchet et al., Phys. Rev. X., 10, 031048 (2020)

R. Géneaux et al., Phil. Trans., 377, 20170463 (2019)

How to apply:

Interested candidates should send a CV, a list of publications, a cover letter summarizing expertise and research interests, and arrange for at least two letters of recommendation to romain.geneaux@cea.fr and thierry.ruchon@cea.fr.

Questions prior to formal applications are welcomed as well. Special care will be taken to promote diversity.

More at

http://iramis.cea.fr/LIDYL/BiblioATTO.php

http://iramis.cea.fr/LIDYL/

https://erc.europa.eu/news/erc-starting-grants-2021-project-highlights#SPINFIELD