

PhD Student Position on Theory of Structured Attosecond Pulses Applied to Ultrafast Magnetism

The University of Salamanca invites application for a 4-year PhD Student position to start in September 2020. The position is part of the project **ATTOSTRUCTURA**, “**Structured attosecond pulses for ultrafast nanoscience**”, funded by the European Research Council (ERC) under the European Union’s Horizon 2020 research and innovation program (grant agreement No. 851201). The candidate will be co-advised by Dr. Rocío Yanes (expert in spin dynamics simulations and magnetic textures) and Dr. Carlos Hernández-García (expert in ultrashort laser pulses and nonlinear optics).

The PhD candidate will enroll the project at the Laser Applications and Photonics Research group (ALF-USAL) at University of Salamanca (<https://laser.usal.es/alf/en/home/>). He/she will find a dynamic and international working environment, and will enroll in the theoretical group. ALF-USAL is an interdisciplinary Optics research group with expertise in both theory (strong-field physics, nonlinear optics, ultrafast phenomena, attosecond science) and experiments (ultrashort pulse characterization, pulse shaping, photonic crystals, ultrashort micro-machining).

The candidate will explore the application of ultrashort structured pulses in ultrafast magnetism, an emerging field that is opening exciting scenarios in laser-matter interaction at the most fundamental level, merging the fields of Optics and Magnetism.

Application

- Application deadline: **July 24th 2020**.
- Interested candidates should send a CV (maximum 3 pages), a complete list of grades during his/her Physics degree and Master program, a personal statement with interests and reasons for applying, and two recommendation letters to Dr. Carlos Hernández-García (carloshergar@usal.es)

Contact Dr. Carlos Hernández-García (carloshergar@usal.es)

Estimated starting date: September 2020

Type of contract: PhD contract, four years, full-time employee (37.5 hours a week)

Gross salary:

- 1.300 €/month (14 salaries), during the first and second years.
- 1.384 €/month (14 salaries), during the third year.
- 1.702 €/month (14 salaries), during the fourth year.

Eligibility criteria

- University degree in Physics.
- Master program, Physics-related.
- Advanced level of English: higher than B2 according to the Common European Framework of Reference for Languages or equivalent.
- Candidates should be able to demonstrate a promising track record of achievements appropriate to their career stage.

Selection process

The selection process is governed by the principles of publicity, equality, merit, and ability, constituting the effect of one selecting body composed of representatives of the group of research of USAL.

The selection process will consist of two phases:

1. Analysis phase and curricular value of all nominations received, classified on the basis of better adaptation of the Curriculum vitae to the profile established and compliance with the requirements.
2. Personal interview: the three candidates with the highest scores in the Phase 1 will be selected for a personal interview.

Selection Commission

The selection commission will be made up of the two co-advisors, Dr. Rocío Yanes and Dr. Carlos Hernández-García, and one member of the research team Laser Applications and Photonics Research group (ALF-USAL) at University of Salamanca.

Job functions

- Development of theoretical methods to describe the interaction of femtosecond and attosecond structured laser pulses with antiferromagnetic materials, using state-of-the-art high-performance computing techniques.
- Theoretical studies of the manipulation of magnetic properties, such as the generation of skyrmionic structures, using structured laser pulses at the femtosecond and attosecond timescales.
- Development and implementation of theoretical simulations of laser-matter interactions in solids, including particle-in-cell (PIC).

Essential requirements

- University degree in Physics.
- Master program, Physics-related.
- Advanced level of English: higher than B2 according to the Common European Framework of Reference for Languages or equivalent.
- Candidates should be able to demonstrate a promising track record of achievements appropriate to their career stage.