UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

PhD positions in Nonlinear Optics and Nanophotonics

We offer a **PhD grant** to be developed within the research project **"Enhancement of Nonlinear Interactions in Optical Metasurfaces"** at the **Nonlinear Optics and Lasers Laboratory,** Nonlinear Dynamics, Nonlinear Optics and Lasers (DONLL) research group, Universitat Politècnica de Catalunya, Barcelona, Spain.

Project title and code: PID2023-148620NB-I00 "Incremento de la interacciones no lineales en metasuperficies ópticas" / ""Enhancement of Nonlinear Interactions in Optical Metasurfaces" (ENIOM)

PhD Program: Doctorat en Física Computacional i Aplicada

Position description:

- 4 years full time pre-doctoral contract
- estimated starting date: January 2025
- gross annual salary: 1st year 19.479 € and 2-4th years 24.348 €

Supervision: Profs. **Jose Trull** and **Crina Cojocaru**

Deadline: October 27th 2024, 14h.

Requirements:

- Bachelor's + Master's degree Physics, Physical Engineering, Photonics, Electrical Electronic Engineering or related;
- Knowledge of optics, electromagnetism, nonlinear optics, photonics.
- Fluent spoken and written English level;
- Basic computational skills.
- Optional: experimental skills, internships and projects will be positively evaluated.

Project overview: Experimental and theoretical study of linear and nonlinear light-matter interaction in nano-structured artificial materials (photonic crystals and optical metasurfaces), in a search for new functionalities in Photonics. Some of the physical phenomena involved are the **harmonic generation in opaque region of semiconductors**, **excitation of plasmonic waves** in metals and conductive oxides and **topological surface waves.** The aim is to maximize the potential impact of nonlinear metasurfaces to new nanophotonic devices, such as multiple frequency generators, tunable emitters extended in the UV and optical sensors, all into the interconnected fields of **nanomaterials** and **nonlinear optics.**
The selected candidate will work on the design and measurement of novel nanophotonic structures performing a combination of theoretical and experimental tasks: developing numerical simulations, setting new experimental set-ups and experimentally proving the optical properties of the nanostructure. Participate in international collaborations and international internships in prestigious research groups in USA, Italy or Australia. Participate in national and international conference. Be part of our research group, being in contact with other PhD students working on different subjects in the fields of nonlinear optics, nonlinear dynamics and lasers, research well recognized at the international level.

Application information: candidates should apply trough the official application platform, uploading all documents in the required format.

Requirements: https://rdi.upc.edu/ca/financament/carrera-investigadora/r1/ajuts-formacio-de-doctors-2024/ajuts-formacio-de-doctors-2024

Link to the application form: chose "application 2024 1st call" and select "Process" for UE candidates and "Process (non EU), for non-EU candidates.

https://seuelectronica.upc.edu/en/procedures/call-for-grant-applications-for-predoctoral-contracts-for-doctoral-trainees?set_language=en.

Note: for foreign diplomas and academic transcripts, the equivalents in the Spanish system should be previously required at the Ministerio de Ciencia, Innovación y Universidades at:

https://universidades.sede.gob.es/pagina/index/directorio/Equivalencia_notas_medias/language/en