PHD RESEARCH POSITION IN COTUTELLE BETWEEN
THEORY OF NANOPHOTONICS GROUP **Donostia International Physics Center DIPC (San Sebastián)**
NANOPHOTONICS GROUP **Institut d'Optique Graduate School (Bordeaux)**

The Group of Theory of Nanophotonics of San Sebastián and the Nanophotonics group of Bordeaux offer a PhD position starting in 2024 to work on **theoretical and experimental aspects of quantum nanophotonics**. The student will work on the optimization of **light emission** from coherently coupled organic molecules in controlled nano-environments for **molecular characterization or quantum information technologies**. Collective phenomena such as superradiance and subradiance induced by collective excitation of the emitters will be studied, especially by analyzing the correlations of the light emitted by these systems. The candidate is expected to focus on the theoretical description of cutting-edge experiments under way in the laboratory of Bordeaux, with the aim of developing applications in quantum state engineering.

To perform this work, the PhD will need to learn classical and quantum electromagnetism treatments of nanophotonics systems, and to become very familiar with the details of state-of-the-art experiments. To facilitate this task, the work will be performed in the regime of cotutelle, so that the candidate will benefit from the supervision of two distinguished researchers in nanophotonics: Prof. Javier Aizpurua (https://scholar.google.es/citations?user=ApU1u7YAAAAJ&hl=es), group leader of the Theory of Nanophotonics group, and Prof. Brahim Lounis (https://scholar.google.es/citations?hl=es&user=krWSU9kAAAAJ), group leader of the experimental Nanophotonics group.

The candidate is required to spend time working both in San Sebastián and in Bordeaux as part of the cotutelle, and will receive a PhD title from both the University of the Basque Country (Spain) and the University of Bordeaux (France). The candidate is also expected to get involved in ongoing collaborations of both groups. The selected candidate will be funded by a **PhD grant** within the Laboratories for Transborder Cooperation Network (LTC Sarea, laboratory Translight).

The Theory of Nanophotonics Group at the Donostia International Physics Center and Center of Materials Physics in San Sebastián addresses the optical response of nanoscale systems. Current research topics in the group include theoretical modeling of light-matter interactions for applications in plasmonic devices, quantum plasmonics and field-enhanced spectroscopy and microscopy. More information can be found in: http://cfm.ehu.es/nanophotonics/

The research activities of Bordeaux Nanophotonics Group aim at understanding, mastering and using light-matter interactions at the nanometer scale. For this purpose, the group develops ultra-sensitive optical nanoscopy techniques for the detection of individual nanoscale objects, to perform the spectroscopy of their electronic excitations, and to explore groundbreaking applications in quantum sciences, condensed matter physics and biophotonics. https://bordeaux-nanophotonics.fr

Candidates must hold an internationally-recognized master- equivalent degree in Physics, Material Science or Electrical Engineering, preferably in the field of Nanophotonics. Expertise in nanophotonics, molecular spectroscopy and quantum optomechanics are particularly appreciated.

Suitable candidates are requested to submit:
1- A presentation letter with declaration of interests (max. 1 page).
2- A Curriculum Vitae, including information of your grades during the university studies.
3- Two reference letters.

Applications or general enquiries should be submitted by email to **ruben.esteban@ehu.eus** with the subject label “PhD Cotutelle Nanophotonics”. The deadline for the first screening is the 1st of February 2024 or until a good candidate is found.