



CALL FOR APPLICATIONS - October 2022

PhD Student Position

Donostia International Physics Center (DIPC) is currently accepting applications for PhD Student positions. This is a unique opportunity for highly motivated students, recently graduated from the university in Physics or related fields, to join one of DIPC's high-profile research teams. A description of each of the available openings, contact information and deadlines can be found on the following pages.

Although candidates are welcome to contact the project supervisors to know further details about the proposed research activity, please be aware that the application will be evaluated only if it is submitted directly to the email address listed as "application email".

Applications received by the deadline will be evaluated by a Committee designed by the DIPC board on the basis of the following criteria:

- CV of the candidate (60%)
- Adequacy of the candidate's scientific background to the project (20%)
- Reference letters (10%)
- Other: Diversity in gender, race, nationality, etc. (10%)

Evaluation results will be communicated to the candidates soon after. Positions will only be filled if qualified candidates are found.

The DIPC may revoke its decision if the candidate fails to join by the appointed time, in which case the position will be awarded to the candidate with the next highest score, provided it is above 50 (out of 100).

However, the selected candidate may keep the position if, in the opinion of the Selection Committee, the candidate duly justifies the reasons why he or she cannot join before the specified deadline, and as long as the project allows it.

Ref. 2022/75
Decomposition of nonlinear optical properties

Supervisor(s):
Josep M. Luis (josepm.luis@udg.edu)
Pedro Salvador (pedro.salvador@udg.edu)

Duration: 1 year

Application Deadline: 21/10/2022

Application Email: jobs.research@dipc.org

Great attention has been paid to materials characterised by a large nonlinear optical response, as they are commonly used in communication technology and hold the potential towards future devices that are more powerful, cheaper and more energy-efficient. Such materials have large values for their nonlinear optical properties (NLOP), and so the analysis of these properties becomes very interesting for different technological applications.

Real-space analysis of molecular properties is of utmost relevance in order to digest the information of increasingly complex ab initio calculations into quantities expressed as genuine chemical terms.

Over the last 15 years, Pedro Salvador and coworkers have developed new tools for wave function analysis based on these simple concepts (e.g. bond orders, oxidation states, molecular energy components...); while Josep Maria Luis has been working in developing new methodologies for the calculation of NLOP and their partition. This will project a meeting point for these two fields of research, applying all the obtained knowledge to perform new and enhanced analyses, and to develop methodologies that combine aspects of both fields. The goal of this project is incorporating in the group's toolbox new tools for the analysis of NLOP, that will be consistent and connected with the previously developed tools.

Interested candidates should submit an updated CV and a brief statement of interest to the application email listed above. Reference letters are welcome but not indispensable. The reference of the specific opening to which the candidate is applying should also be stated in the subject line.