



CALL FOR APPLICATIONS - October 2022

Research Assistant Position

Donostia International Physics Center (DIPC) is currently accepting applications for Research Assistant positions. This is a unique opportunity for highly motivated students, recently graduated from the University in Physics or related fields, to gain research experience in 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 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. 2022/70

Magnetism in graphene nanostructures: spin chains with tunable interactions

Supervisor(s):

Aran Garcia-Lekue (wmbgalea@ehu.eus)

Duration*: 1 year

Application Deadline: 21/10/2022

Application Email: jobs.research@dipc.org

The objective of this project is the theoretical study of the electronic and magnetic properties of various types of graphene nanostructures. We will mainly focus on the properties of graphene nanoribbons (1D systems) and nanoporous graphene (2D) doped with heteroatoms such as boron, nitrogen and other light elements, and in studying how these properties depend on the topology of the electronic structure of the pristine systems.

New surface synthesis techniques allow these nanostructures to be manufactured with atomic precision, generating localised spin moments in well-defined positions without using heavy metals. These graphene nanostructures are particularly attractive for developing flexible opto-electronic devices and, given the long spin lifetimes in such materials, for applications in spintronics and the development of new spin qubits.

Our study will require combining several theoretical techniques: first principles calculations based on density functional theory, mapping to simplified effective models (Hamiltonian Hubbard) and high-level solutions of the many-body problem of such models. This will allow us to study the nanostructures synthesis and characterised in the laboratory by our collaborators, comparing in detail the experimental observations and the theoretical predictions.

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.

***Initial funding is for 1 year, renewable to 4 years. Application for external funding via fellowships will be expected and supported.**