Donostia International Physics Center

DIPC POST-DOCTORAL POSITIONS

The Donostia International Physics Center DIPC is currently accepting applications for post-doctoral appointments. This is a unique opportunity for highly motivated junior researchers with a recent PhD degree in physics or related fields to join some of the DIPC high-profile research teams.

Interested candidates please send an updated CV, a brief statement of interest, and contact information to postdoc@dipc.org. Reference letters are welcome but not indispensable. The particular position(s) to which the candidate is applying should be stated as well. Although candidates are encouraged 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 mentioned above (postdoc@dipc.org).

Next review of applications is scheduled for November 1st 2011. Applications must be received before this date and will be evaluated by a Committee designed by the DIPC board on the basis of the following criteria (with point weights indicated in parentheses):

- CV of the candidate (40%)
- Adequacy of the candidate's scientific background to the project (40%)
- Reference letters (10%)
- Others: 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 duration of the appointment will be 1 year. The appointment could be renewed for a second year, subject to performance and to the availability of funding.

The salary will be 32000 euros per year before taxes.

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JOB OPENINGS

- ***Magnetoelectric couplings and related optical responses***

Post-doctoral position; Reference: 2010/4.
Contact person: I. Souza (ivo_souza@ehu.es).

The target area for this position is the theory of magnetoelectric couplings in solids. Possible topics include: (1) the orbital magnetization response to a static electric field; (2) magnetoelectric effects in the optical range, as well as the closely-related phenomenom of optical activity in non-magnetic solids. Experience with first-principles density-functional methods is essential.

- ***Electronic excitations and many-body effects in solids, surfaces, and nanostructures***

Post-doctoral position; Reference: 2010/7.
Contact person: J.M. Pitarke (jm.pitarke@ehu.es).

The aim is to carry out model and first-principles theoretical investigations of electronic excitations and many-body effects in solids, surfaces, and nanostructures, in the framework of Density-Functional Theory (DFT), Time-Dependent DFT, Green functions, and Quantum Monte Carlo.

- ***Nanostructure formation under swift heavy ion irradiation of metals and insulators***

Post-doctoral position; Reference: 2011/3 .
Contact person: I. Juaristi (josebainaki.juaristi@ehu.es).

The aim of this project is to develop a theoretical framework that allows to model energy dissipation and relaxation processes of different target materials under irradiation of highly charged swift heavy ions. The purpose is to gain knowledge on the mechanisms that control the creation of defects and different kind of nanostructures for different projectile/target combinations.

- ***Electronic structure investigations on defect arrays by angle-resolved photoemission***

Post-doctoral position; Reference: 2011/4 .
Contact person: F. Schiller (frederikmichael.schiller@ehu.es).

Angle resolved photoemission spectroscopy should be used to investigate the effect of defects to the electronic band structure of solids. Posible topics include: (1) electronic structure of stepped graphene (graphene nanoribbons); (2) modification of the electronic bandstructure of graphene by substitutional defects (graphene doping).

- ***Electronic structure and many-body effects in layered semiconductors***

Post-doctoral position; Reference: 2011/5 .
Contact person: E. Chulkov (evguenivladimirovich.tchoulkov@ehu.es).

A post-doctoral position is focused on theoretical study of electronic structure and many-body effects in layered semiconductors with strong spin-orbit coupling. The position will be part of a project directed to investigation of spin-orbit related phenomena in new classes of materials which attract great attention in context of spintronic applications. The prime interest here is electronic properties resulting from Dirac-like band dispersion of spin-helical surface states in topological insulators and giant Rashba-type spin splitting of bulk and surface states in polar semiconductors. The position involves collaboration between leading experimentalists from Japan, Germany, and Switzerland and ab-initio theorists from Spain, Germany, and Russia. The study is intended to be based on performing ab initio GW calculations with taking spin-orbit interaction into account. The tasks will include an analysis of elementary excitation spectra in general and band gaps in particular, an examination of an effect of different reference one-particle band structure (LDA or GGA) as starting point on GW results, and also a consideration of possible inclusion of vertex corrections to the GW self-energy.