Donostia International Physics Center

DIPC PhD STUDENT GRANTS

The Donostia International Physics Center DIPC is currently accepting applications for PhD students. This is a unique opportunity for highly motivated students, recently graduated from the University in physics or related fields, to develop a research career joining some of the DIPC high-profile research teams.

DIPC PhD grants last for just 12 months. An extension of the grant may be accepted just in some exceptional cases. DIPC PhD grants are intended to support the student during the first steps of his/her research career. Further financial aid to continue the PhD research project after this period should be obtained from other institutions.

Interested candidates please send an updated CV including an academic transcript with the obtained marks, a brief statement of interest, and contact information to phd@dipc.org. Reference letters are welcome but not indispensable. The particular PhD position(s) to which the candidate is applying should be stated as well.

Next review of applications is scheduled for April 27th. Applications 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 (60%)
- Adequacy of the candidate's scientific background to the project (20%)
- Statement of interest and 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.

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PhD OPENINGS

- ***Nanostructured noble metal surfaces: transport properties***

PhD position, contact person: Enrique Ortega (enrique.ortega@ehu.es). Reference: 2012/2.

The objective is to study transport properties of nanostructures noble metal surfaces that exhibit strongly modulated surface band structures. In particular, using the Ag/Cu(111) strain dislocation network as a ground system. we plan to explore doping materials that allow one to tune the superlattice band gap around the Fermi energy. Experimentally, we aim at determining the surface electron lifetime from surface state line width analysis across the Brillouin zone, using the Angle Resolved Photoemission (ARPES). The project will be carried out with the ARPES setup at the Nanophysics Lab of the Centro de Física de Materiales.

- ***Scattering and reactive processes in gas/surface dynamics***

PhD position, contact person: Iñaki Juaristi (josebainaki.juaristi@ehu.es). Reference: 2012/3.

The aim of this project is to describe the interaction of thermal and hyperthermal diatomic molecules, such as O2 and N2, with metal surfaces. Dissociative and non-dissociative adsorption probabilities, energy and angular distributions of the scattered molecules, are among the magnitudes to be analysed. To this aim, molecular dynamics calculations will be performed on top of multidimensional potential energy surfaces calculated using density functional theory. Targets of interest constitute the surfaces of noble metals such as Ag and surfaces of transition metals such as W and Fe.

- ***Time-Dependent Reduced Density Matrix and density functional formalisms for many electron systems***

PhD position, contact person: Angel Rubio (angel.rubio@ehu.es). Reference: 2012/4.

The objective of the work would be to analyze in detail dynamical processes in many-electron systems brought out of equilibrium requires a proper description of static and dynamical correlation effects. We will develop approximations from time-dependent density functional schemes as well as address the Born, Bogoliubov, Green, Kirkwood and Yvon (BBGKY) hierarchy of equations for describing the full time-evolution of a many-body fermionic system in terms of its reduced density matrices (at all orders). We will restrict our analysis to the coupled evolution of the one- and two-body reduced density matrices, where higher order correlation effects are embodied into the approximation used to close the equations. We will apply those developments to the description of attosecond dynamics and high intense laser phenomena in simple and correlated molecular systems. energy and angular distributions of the scattered molecules, are among the magnitudes to be analysed. To this aim, molecular dynamics calculations will be performed on top of multidimensional potential energy surfaces calculated using density functional theory. Targets of interest constitute the surfaces of noble metals such as Ag and surfaces of transition metals such as W and Fe.