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.

Applicants are advised to hold, or be in the final year of a master's degree in physics, chemistry or material science.

Next review of applications is scheduled for June 14th. 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

- ***Non-adiabatic effects in the interaction of metal surfaces with atoms and small molecules***

  Contact person: Dr. Maria Blanco Rey (maria_blancorey@ehu.es)
  Reference: 2013/3

  Heterogeneous catalysis is a recurrent motivation in surface science.Many molecules that are highly stable in their gas phase, e.g. N_2 or O_2, show a reduced binding energy upon interaction with a metal surface, specially when colliding at hyperthermal velocities. The case of atomic species is equally interesting, because the inverse process, i.e. selective molecule formation, can take place. Such a synthesis process may release a large amount of energy onto the surface, and therefore it is considered to be a major source of damage in aerospace vehicle coating materials, which perform in environments where ions and single atoms are present.

  We propose to study the dynamics of such interactions. First principlescalculations based in the Density Functional Theory (DFT) are a useful tool in this field, since they provide with accurate quantitative information in problems of high sensitivity towards multidimensionality, as it is the case of molecule/atom-surface interactions. Nevertheless, usual DFT calculations do not feature built-in non-adiabatic effects, but they are usually introduced “a posteriori” in the dynamical analysis using a number of parametrizations. Non-adiabatic effects account for the vibrational (phonons) or electronic (electron hole pairs) excitations on the surface brought by the aforementioned energy exchange. In the proposed project, we will explore several implementations of these energy loss channels, as well as their application to relevant case studies.