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 September 30th 2014. 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.

Donostia International Physics Center

JOB OPENINGS

- ***Physical Chemical Reactions at Surfaces: physico-chemical aspects***

  Contact persons: C. Rogero (celia_rogero@ehu.es). Reference: 2014/5.

  The research topic will be “physico-chemical aspects of surfaces”. The work will consist on explorationing and designing new molecular complexes directly synthesized on surfaces in order to provide ground ideas for functional devices of various nature, like nanoscale molecular heterojunctions, molecular magnets, more efficient solar cells, molecular superconductors,... The aim is to characterize and understand the bases of the functional phenomenology of molecular materials that will be key components of future technological devices, such as electronics, magnetic storage or optoelectronic deives.

  Since most of the work will be performed in ultray high vacuum (UHV) conditions, the candidate should have proven experience in ultra high vacuum and in some of the surface science characterization techniques (STM, AFM, XPS, synchrotron radiation…). Previous experience with surface science techniques will be desirable. We are looking for highly motivated candidates, able to work in a dynamic environment and to contribute with his/her own ideas to the group.

- ***Computational Studies on Calcium Silicate Hydrates***

  Contact person: Andres Ayuela (swxayfea@ehu.es). Reference: 2014/9.

  We are currently looking for a Postdoctoral Fellow in the field of condensed matter physics and first principles calculations to carry research on the phases and nanostructure in calcium silicates present in cements and concrete. This work is in collaboration with a local technological center.

  Experience in the use of ab-initio electronic structure calculations to study physical properties of condensed matter and to relate them to their chemical composition and atomic structure is preferred. Candidates will be expected to have

  - experience or strong interest in first principles calculations

  - experience or strong interest in silicate materials

  - high scientific curiosity towards new research topics

You will work in a stimulating international environment with excellent opportunities for new initiatives and independent research.

- ***Electron-phonon interaction in the surface states of 3D topological insolators and Rashba-type compounds with strong spin-orbit interaction***

  Contact person: Eugene Chulkov (waptctce@sq.ehu.es). Reference: 2014/12.

  Recently discovered topological insulators (TIs) demonstrate spin-orbit coupling (SOC) induced inversion of the energy gap edges in some parts of the Brillouin zone (BZ) that in turn causes the appearance of gapless surface states with linear dispersion (massless or Dirac surface states). The gapless states protected by time reversal symmetry or by the combination of time reversal and crystal lattice symmetries (crystalline topological insulators) are robust and insensitive to a weak disorder and non-magnetic interactions.

  Since these states exhibit spin-momentum locking with prohibited electron backscattering the electron-electron intraband scattering is not efficient in the excited electron decay and one can expect more efficient electron-phonon decay channel. Available experimental data show contradictory trends: from nearly negligible electron-phonon coupling to coupling similar to that in lead. Similar situation is observed for Rashba-type systems like BiTeCl, BiTeBr and others.

  In this project ab initio theory is applied to calculations of electron and phonon structure as well as electron-phonon coupling in simple and complex topological insulator systems and Rashba type compounds. Also Rahman modes and dynamical inastability of Dirac and Weyl systems will be investigated.

- ***Physics and Chemistry of Curved Crystal Surfaces***

  Contact person: Enrique Ortega (enrique.ortega@ehu.es). Reference: 2014/13.

  The research topic is the “Physics and Chemistry of Curved Crystal Surfaces”, which aims at characterizing (electronic states, chemical activity and epitaxial growth) in a wide variety of single crystal surfaces at unexplored symmetry directions. The work implies the use of a full battery of refined Surface Techniques, namely LEED, STM/STS, and laterally resolved electron spectroscopies, such as XPS and ARPES.

  The successful candidate should hold a PhD in experimental physics, dating not before 2009, and have a good background on solid-state physics. A preferential prerequisite is the proven ability/experience in Ultra High Vacuum Techniques, plus either STM/STS or XPS/ARPES experience. We are looking for a highly motivated candidate, able to work in a dynamic environment and to contribute his/her ideas to the group.