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 June 20th 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.

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JOB OPENINGS

- ***Characterization of structural and electronic properties of molecular overlayers on metal surfaces***

  Contact person: Andres Arnau (andres.arnau@ehu.es). Reference: 2014/7.

  In this project, we aim at studying different kind of molecular overlayers ranging from single organic molecules to self-assembled monolayers and metal-organic coordination networks.

  Properties like the reversible change between two states in bistable systems or structural modification of networks by additional molecule adsorption will be considered, as well as the presence of magnetic order when 3d, 4d and 5d transition metal atoms are constituents of the network.

  Both first principles density functional theory and model hamiltonians will be used to described the systems. The candidate should have a good background in solid state and many-body physics, as well as experience in computational methods and programming.

- ***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.

- ***Weyl nodes in ferromagnetic bandstructures***

  Contact person: Ivo Souza (ivo_souza@ehu.es). Reference: 2014/10.

  Weyl points in 3D bandstructures are receiving increasing attention in connection with topological states of matter. The goal of the project is to use first-principles calculations to investigate how the presence of Weyl nodes - isolated points of degeneracy between two bands - affects the anomalous Hall conductivity (AHC) of ferromagnets. The basic idea is that the AHC is caused by the k-space Berry curvature (a kind of magnetic field in reciprocal space), and Weyl points act as "magnetic monopole" sources of Berry curvature.

  With these motivations, we will carry out a systematic search for Weyl nodes in the bandstructure of bcc Fe using first-principles calculations. We will also compute the "Chern index" of each Fermi surface sheet (the net charge of the enclosed Weyl points), and decompose the total AHC into contributions from individual Fermi surface sheets.