

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@ehu.es. Reference letters are welcome but not indispensable. The particular position(s) to which the candidate is applying should be stated as well.

Next review of applications is scheduled for November 20th. 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 (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.

- **First-principles calculations of contact effect on quantum transport**

Post-doctoral position, contact person: P.M. Echenique (pedromiguel.echenique@ehu.es). Reference 2009/11.

In this project we will focus on electronic quantum transport calculations: development of scattering states based methodology and applications. Our aim is to study some benchmark systems of experimental interest, which are highly sensitive to the atomic positions of the contact and to the anchoring to the electrodes. This contact effect yields many discrepancies between experimental and theoretical worlds. The main goal of this work

will be to elucidate those discrepancies and to get an accurate agreement between experiments and theory.

- **Time-resolved oxide mediated photocatalysis**

Post-doctoral position, contact person: A. Rubio (angel.rubio@ehu.es). Reference 2009/12.

In this two year project, we will concentrate on the study of the electronic, structural, and spectroscopic properties of 1D (nanorods, nanotubes, and nanobuds) and 2D (nanoribbons, layers, and surfaces) materials and systems for nanoelectronics, nanosensing, and photocatalysis. Project objectives: (1) to accurately model the electron transport properties and (2) to obtain a quantitative analysis of the photocatalytic activity of doped and undoped metal oxide nanostructures, which requires an accurate description of attosecond scale phenomena.

- **Further development of PNOF Natural Orbital Functional**

Post-doctoral position, contact person: J. Ugalde (jesus.ugalde@ehu.es). Reference 2009/13.

Recently, a new kind of Natural Orbital Functional (NOF) referred to as PNOF has been proposed. The aim of this proposal is to propose an improved approximation for the PNOF and to implement the resulting formalism in a new computational code. Validation tests for predicting several atom and molecular properties, namely, energies, polarizabilities, equilibrium geometries, vibrational frequencies, ionization potentials, electron affinities, etc, will be performed.

- **First-principles calculations on nanostructures**

Post-doctoral position, contact person: A. Ayuela (swxayfea@sw.ehu.es). Reference 2009/14.

The candidate will use ab-initio electronic structure calculations to study physical properties (magnetic, optical and electrical) of condensed matter and to relate them to their chemical composition and atomic structure. Research will be carried on in one or some of the following projects: (1) Extension of our present Mn doped quantum dots works, (2) Study of the coupling between magnetism and magnetoelasticity (3) Further work on phases and nanostructures in cements and concrete.