Postdoctoral position in theoretical physics for condensed matter

A post-doctoral position in the area of theoretical condensed-matter physics is open for a young researcher in the Laboratoire des Solides Irradiés (LSI), École Polytechnique, Palaiseau, France.

Nitrogen-vacancy centers in diamond are used at ambient *T* as magnetic sensors on the nanometer-scale and, since recently, at high pressure (*P)* to detect pressure-induced superconductivity. The project aims at understanding, via *ab initio* calculations and the modeling of electronic correlations, the effect of non-hydrostatic components of the stress tensor on the symmetry and values of the energy levels of the N-V center in diamond when used in the anvil of a diamond anvil cell used to apply high pressures.

Electronic correlations will be modeled through the extension of Hubbard's model for many-body states. A part of code development and numerical implementation is to be expected. One body states will be obtained through simulations performed within the Density Functional Theory (DFT) with the QUANTUM ESPRESSO package.

The post-doctoral contract will approximatively 15 months. The post-doc is funded by CEA, the Commissariat à l'Énergie Atomique et aux Énergies Alternatives (http://www.cea.fr)[1].

The post-doctoral researcher will work in collaboration with theoreticians Nathalie Vast and Jelena Sjakste (LSI), as well as with Yeonsoo CHO (PhD student). A collaboration with experimentalists of the ANR project is also part of the project.

Ideally, the candidate has a doctoral degree in mathematical physics for condensed matter, a deep understanding of what electronic correlations are, and some experience in *ab initio* simulations within DFT. An experience in code development is required.

For further information about the project, please contact questions to
Nathalie Vast (nathalie.vast@polytechnique.edu).

To apply for this position, please send your CV, list of publications and motivation letter to Nathalie Vast. Please mention the contact details of three reference persons in your application.

[1] *Via* an ANR (http://www.anr.fr) project.

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