



CRANN

2 PhD positions in theory and design of spin-transfer torque devices

Two PhD positions are available from September 2015 in the CRANN Institute (www.crann.tcd.ie) at Trinity College Dublin (Ireland). Sponsored by Science Foundation of Ireland (SFI) these are integrated in a project aimed at constructing a predictive, multi-scale, theory of spin transport and spin dynamics in nanoscale devices. The successful applicants will join a team of 2 PhD students and 2 Postdoctoral researchers and will be hosted by Prof. Sanvito's *Computational Spintronics Group* (www.spincomp.eu). Both projects will include methodological algorithm development and materials science, and will involve collaboration with both theoretical and experimental groups, as well as with data storage industry.

First PhD position

It aims at developing a high-throughput electronic structure approach to the design of new magnetic tunnel junctions. The project will combine advanced electronic structure theory and data-mining/artificial intelligence methods to design new, high-efficiency, magnetic nanostructures.

Second PhD position

It aims at investigating electron transport in nanoscale magnetic devices both at finite bias and in the linear response limit. The main theoretical tool will be density functional theory combined with the non-equilibrium Green's function method for transport and most of the computation will be done with the *Smeagol* code (www.smeagol.tcd.ie).

Essential/Desirable Criteria

Strong overall motivation and a keen interest in theory and computation, as well as in interdisciplinary work between physics and materials science. Previous experience in UNIX/Linux environment and with programming in either Fortran and/or C/C++. Ability to work independently and also function as an active and efficient team player. Good writing skills. Previous knowledge of density functional theory and/or electronic structure methods will be considered as an advantage.

How to apply?

Applications must include a cover letter detailing how you meet the selection criteria for the post, together with a CV and the name and contact details of referees (e-mail address). Informal enquiring and applications should be sent to:

Prof. S. Sanvito (Trinity College Dublin, sanvitos@tcd.ie)



Trinity College Dublin
The University of Dublin