MAR12-2011-000261

Abstract for an Invited Paper
for the MAR12 Meeting of
the American Physical Society

Carbon based devices for molecular quantum spintronics[1]

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This presentation will address a new field called molecular quantum spintronics, which combines the concepts of spintronics, molecular electronics and quantum computing [1]. Various research groups are currently developing low-temperature scanning tunnelling microscopes to manipulate spins in single molecules, while others are working on molecular devices (such as molecular spin-transistors, spin valves and filters, and carbon-nanotube-based devices [1]) to read and manipulate the spin state and perform basic quantum operations. The talk will discuss the read-out of the spin states of single-molecule magnets using carbon based devises. In particular, carbon nanotube devices [2] and graphene nano-constrictions [3] will be discussed.

[1] L. Bogani & W. Wernsdorfer, Molecular spintronics using single-molecule magnets, Nature Mat. 7, 179 (2008).
[2] M. Urdampilleta, S. Klyatskaya, J.-P. Cleuziou, M. Ruben, W. Wernsdorfer. Supramolecular Spin Valves. Nature Mat. 10, 502 (2011).
[3] A. Candini, S. Klyatskaya, M. Ruben, W. Wernsdorfer, M. Affronte. Graphene Spintronic Devices with Molecular Nanomagnets. Nano Lett. 11, 2634, (2011).

[1]This work is supported by the projects ANR-PNANO MolNanoSpin No. ANR-08-NANO-002, ERC Advanced Grant MolNanoSpin No. 226558, and STEP MolSpinQIP.