



Séminaire Igor ROZHANSKY

Mardi 18 juin 2019 à 14h00

Salle réunion du LSI - bat 83-2034

Ecole polytechnique - Bâtiment 83

Spin-dependent-tunneling and scattering phenomena in nanostructures

The seminar will focus on the selected unusual spin-dependent phenomena arising from spin-orbit and exchange coupling and from their combination. The resonant tunneling between 2D electron or hole layers with spin-orbit interaction leads to a complex interference pattern in the tunnel current. A non-equilibrium spin-dependent tunnel recombination in heterostructures with a quantum well (QW) and a remote layer of magnetic impurities results in an ultra-fast spin injection into QW and non-trivial role of the Coulomb correlations at the impurity. Another resonant spin tunneling phenomena is indirect exchange interaction between magnetic ions via 2D electron gas separated by a potential barrier, the phenomena was observed experimentally in GaMnAs heterostructures and opens a way to a gate-controlled magnetism in semiconductors. I will also talk about a theory of a topological and chiral Hall effect observed in magnetic chiral spin textures but also expected in a far wider class of systems. Our most recent studies suggest it to occur in the tunneling across a semiconductor interface.

Pause
café à
13h30