

Magnetism and spin dependent transport in nanoscale structures

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Reduced dimensionality has a great impact on the properties of the material and devices. A significant change in the electronic and magnetic properties is observed when the dimension is reduced from bulk (3D) to nanostructures (2D thin films, 1D wires, 0D dots). When these dimensions reach the characteristic length scales (e.g., electron mean free path, spin diffusion length) new surface and quantum effects play a role and that allows manipulation of properties by nanostructuring. In this talk, I will briefly discuss three interesting exemplary cases: Growth, structure and magnetic properties of 1) highly anisotropic epitaxial RE-Co films, Spin dependent transport in 2) magnetic nanocontacts and 3) graphene nanostructures.