



Institute Seminar

Thursday, 26 Sep 2013 4.00 pm Venue - Fermion

Title

Novel magnetic interactions in amorphous alloy thin films

Speaker

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Abstract: The underlying physics of phase transitions is often studied via the intuitive picture provided by magnetic systems. Theoretical models typically specify the symmetry and degrees-of-freedom of the spin-system, along with the dimensionality of the exchange interactions. In the case of magnetism in two-dimensional systems, where two 'universality classes' exist, particularly interesting phenomena emerge. In addition to the 2D-Ising model, where spins are confined to lie along a single axis, the 2D-XY (sometimes also referred to as 'planar-rotor') model leads to the concept of an exotic infinite order phase transition. This transition involves topological defects - in this case magnetisation vortices - which bind in order to allow thermodynamically-forbidden quasi-long-range ordering. In this talk I will discuss prototype materials which demonstrate 2D-XY magnetism, and describe our ongoing quest to harness the various novel topological quasiparticle excitations which may be anticipated in 2D magnetic materials.
