

LOW DIMENSIONAL MAGNETISM

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Magnetic materials used for recording and sensing applications today have one or more dimensions reduced to a few atomic layers. In this limit, the parameters used to describe the magnetic behavior of a given compound differ markedly from those known for bulk systems. In this workshop, we will provide an overview of critical issues related to the understanding, prediction, and characterization of magnetic phenomena in thin films, nanowires, and small particles.

Speakers:

Peter F. de Châtel,

Institute of Nuclear Research of the Hungarian Academy of Sciences, Debrecen, Hungary

- Spin lattice models and magnetic order in one- and two-dimensional systems
- Phase transitions and ordered states in low-dimensional systems (Mermin-Wagner theorem)
- Influence of magnetic anisotropy on magnetic order

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- Experimental observation of magnetic order in low dimensional systems
- Intrinsic magnetization properties and dimensionality effects: saturation magnetization, orbital moments, magnetocrystalline anisotropy energy, intrinsic and induced magnetism in bulk nonmagnetic materials
- Metal-organic layers and single-molecule magnets

Olivier Fruchart,

Institut Néel (NÉEL), Grenoble, France.

- Superparamagnetism
- Thermal activation, nucleation and propagation of domains
- Magnetization reversal in thin films and nanoparticles

Wulf Wulfhekel,

Physikalisches Institut, Universität Karlsruhe (TH), Karlsruhe, Germany

- Magnetic excitations in thin films and clusters probed by Scanning Tunneling Microscopy