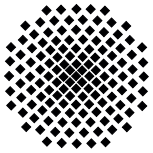
Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme*
Fachbereich Physik, Universität Stuttgart

Ansprechpartner: Dirk Manske
E-Mail: d.manske@fkf.mpg.de
Telefon: 0711 - 689-1552



Dienstag, 15. November 2011 | **17.15 Uhr** | **Hörsaal 2 D5**

Stuttgarter Max-Planck-Institute, Heisenbergstraße 1, 70569 Stuttgart-Büsnau

Excitations in Incommensurate Magnetic Materials - Experiments with Neutrons

Peter Böni
TU München

Abstract

Materials exhibiting incommensurate magnetic and charge order have revealed many interesting effects in condensed matter physics. Recent examples include (i) high-Tc superconductors, where antiferromagnetic fluctuations may be responsible for the pairing of the electrons, (ii) multiferroic compounds such as manganites or borates, or (iii) non-centrosymmetric compounds such as MnSi, where a skryrmion lattice has been identified under application of a magnetic field. These effects occur due to the competition between magnetic and lattice degrees of freedom in the material. Clearly, neutron scattering is the most direct way to quantify the energy scale of the collective excitations involved. After a short introduction into the technique of neutron scattering I will show recent results that demonstrate striking similarities of the spin dynamics in the archetypical antiferromagnet Cr and the cuprates. The observed dominance of the phason modes may be a general property of incommensurate magnetic systems. Finally, I will demonstrate that a newly developed, high-resolution neutron scattering technique allows proving the stability of mesoscopic ordering phenomena such as the skryrmion lattice in MnSi.

*ehemals Max-Planck-Institut für Metallforschung