



Festkörper-Kolloquium und Seminar TRR 80

am Donnerstag, 13.11.2014

um 17:15 Uhr

spricht

Prof. Dr. Stephen Hayden

University of Bristol

im HS 3 im Physik-Department

über das Thema

Field tunable spin density wave phases in Sr₃Ru₂O₇

Competing and anisotropic interactions can lead to the conduction electrons of a metal ordering in a variety of ways at low temperature. We use neutron scattering to show that the application of a large ≈ 8 T magnetic field to the metamagnetic perovskite metal Sr₃Ru₂O₇ can be used to tune the system through two magnetically-ordered spin-density-wave (SDW) states. The ordered states exist over relatively small ranges in field $\lesssim 0.4$ T suggesting that their origin is due to a new mechanism related to the electronic fine structure near the Fermi energy, possibly combined with the stabilizing effect of magnetic fluctuations. The magnetic field direction is shown to control the SDW domain populations, which naturally explains the strong resistivity anisotropy in this material. Our results have analogies with phase transition in liquid/solid and liquid-crystal/liquid systems, where pre-existing anisotropies in the molecular interactions, for example hydrogen bonding, can stabilize phases with broken translational symmetry over a limited range of pressure, density and concentration

ab 17:00 Uhr Kaffee vor dem Hörsaal

Einführung: C. Pfeleiderer