

DIESE WOCHE

PHYSIKALISCHES KOLLOQUIUM

des Fachbereichs Physik
der Johann Wolfgang Goethe-Universität Frankfurt

Mittwoch, den 25.06.2014, 16 Uhr c.t.
Großer Hörsaal, Raum _0.111,
Max-von-Laue-Str. 1

Prof. Dr. Sander Van Smaalen
Lehrstuhl für Kristallographie,
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*„Phase transitions in the magnetic
materials MOCl (M = Ti, V, Cr, Fe)“*

Isostructural compounds MOCl (M = Ti, V, Cr, Fe) are magnetic compounds with different numbers of unpaired $3d$ electrons on the trivalent metal atoms: $3d^1$ for Ti^{3+} ($S = 1/2$), $3d^2$ for V^{3+} ($S = 1$), $3d^3$ for Cr^{3+} ($S = 3/2$) and $3d^5$ for Fe^{3+} ($S = 5/2$). Orbital order and frustrated magnetic interactions are responsible for a diverse low-temperature behavior of these compounds. They include the formation of a spin-Peierls state in TiOCl , simple antiferromagnetic order in VOCl and commensurate and incommensurate magnetic order in CrOCl and FeOCl . All magnetic phase transitions are accompanied by lattice distortions. I will discuss the magneto-elastic phase diagrams of MOCl and present in detail the effects of non-magnetic doping on the behavior of TiOCl .

Die Dozenten der Physik

Kolloquium