SFB 608

Einladung zum Kolloquium

Ort: Universität zu Köln
II. Physikalisches Institut, Seminarraum 201

Zeit: 19. Oktober 2005, 14:30 Uhr

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Thema: The new compound $YBaCo_4O_7$ and its homologues exhibiting strong magnetic frustration.

A new series of compounds has received increasing attention due to complex magnetic properties and crystallographic/chemical challenges, including phenomena related to geometrical frustration, charge ordering, structural phase transitions, and high chemical flexibility. Starting from the type compound $YBaCo_4O_7$, many iso-structural compounds have been synthesize, resulting in a manifold of compositions with different properties. Within the structure, a net of corner-sharing tetrahedra constitute the magnetic substructure and the net is similar to a hollow wurtzite structure and a kagomé lattice. The geometrical frustration is realized around a crystallographic three-fold axis. In $YBaCo_4O_7$, there are no oxygen vacancies, giving one Co^{3+} and three Co^{2+} ions: this mix-valence of Co has a strong impact on the properties. The magnetic properties of $YBaCo_4O_7$ and its homologues varies with the composition, however all compounds tend towards strong magnetic frustration, resulting in disordered anti-ferromagnetism or spin-glass like properties.

Gez. Prof. Hao Tjeng