



TRR 80 Seminar

Am Dienstag, den 8. Dezember um 16:00 Uhr

spricht

Prof. Dr. Stephen B. Dugdale

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über das Thema

Shedding light on electronic structure with synchrotron x-rays

The electron momentum distribution contains information about the ground-state wave functions of the electrons in a material, and about the occupation of those states. High resolution Compton scattering and magnetic Compton scattering make it possible to probe this momentum distribution, to look at the spin density in momentum space, and indeed the Fermi surface of bulk materials.

In my talk, I will discuss three very different materials where Compton scattering has been able to advance our understanding of their electronic structure.

The perovskite structure hosts a wide range of phenomena, from ferroelectricity and colossal magnetoresistance through to high-temperature superconductivity in the cuprates and pnictides. When superconductivity ($T_c \sim 8\text{K}$) was discovered in the anti-perovskite MgCNi_3 , it provoked great speculation about the order parameter symmetry, given the Ni content and possible proximity to ferromagnetism. For any metal, a study of the Fermi surface topology is considered an important step towards understanding the electronic structure, and after an initial flurry of theoretical studies a lack of suitable single crystals has thus far prevented such an experimental study.

PdCrO_2 is a rare example of a frustrated metallic magnet. I show highlight the role of the Fermi surface in mediating the frustrated interactions between the local moments.

Finally, Co_2MnSi is reputed to be a half-metallic ferromagnet. I will explain how our measurements of the Fermi surface and spin density in momentum space confirm that Co_2MnSi on has a Fermi surface in one spin channel.

Gäste sind herzlich willkommen!

Der Vortrag findet im Seminarraum S-288 / Institut für Physik, Universität Augsburg statt.

Gastgeber: Prof. Dr. Liviu Chioncel
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