

21COE物質階層融合科学セミナー 物性コロキウム

日時：11月16日（火）17:00—17:40

場所：理学部 物理A棟225号室

（物質階層融合科学共通セミナー室）

講師：B. Janousova

（ILL, Grenoble & Charles University, Prague）

題目：Polarization analysis in neutron scattering and
synchrotron radiation studies of CePtSn

We present results of the X-ray resonant magnetic scattering (XRMS) study with polarization analysis and a polarized inelastic neutron scattering experiment of single-crystalline CePtSn. The use of the polarization analysis in both experiments enabled us to describe the magnetic properties of this equiatomic ternary intermetallic compound in its paramagnetic state and below the Néel temperature ($T_N \sim 7.5$ K).

Using neutron polarization analysis of crystal-field (CF) excitations and their interpretation, we demonstrate that all terms of the monoclinic site CF Hamiltonian have to be considered in order to account for all the available experimental data, including susceptibility and high-field magnetization measurements. The CF eigenstates, as probed by inelastic polarized neutron scattering, are not affected by cooperative phenomena neither in the vicinity of the proposed Kondo temperature, T_K , nor below T_N .

The antiferromagnetic ground state of CePtSn was studied by means of X-ray resonant magnetic scattering. The Ce L_2 edge signal shows that an incommensurate magnetic structure with the propagation vector \mathbf{t} varying monotonously between (0 0.415 0) at T_N and (0 0.417 0) at 5.0 K is present. At $T_M = 5$ K, the magnetic propagation vector locks in, and an additional Fourier component develops at $\mathbf{t}' = (0 0.47 0)$. Polarization analysis was used to determine the direction of the ordered Ce moments. The low temperature structure turns out to be rather complex, with overlapping cycloidal spin modulations.

Near the Pt L_3 edge, only non-resonant scattering could be observed, suggesting the induced moment at the Pt site to be negligible, as also indicated by band structure calculations.

A brief introduction to both experimental methods will be also given in the talk.

連絡先：松村 武 (217-6487)

☆ 15:45よりコーヒー、紅茶、お菓子を用意します。カップを持ってお集まり下さい。

世話人

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