

物理学教室

物性コロキウム

日時：2015年10月16日(金) 15:00-16:30

場所：理学研究科合同B棟743号室 (743, Science complex B)

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題目：Unconventional magnetic order and dynamics in 1-2-10 compounds:
a neutron scatter's view

概要：

The Ce “1-2-10” compounds, with formula $\text{CeT}_2\text{Al}_{10}$ (T: transition metal element Fe, Ru, Os), form a novel class of materials with challenging magnetic properties. Whereas a Kondo insulator (KI) behavior is clearly observed in the temperature dependence of their electrical resistivity below room temperature, as well as in their optical conductivity spectra, both $\text{CeRu}_2\text{Al}_{10}$ and $\text{CeOs}_2\text{Al}_{10}$ exhibit a quite unusual long-range antiferromagnetic state, whose high ordering temperature ($T_0 = 27.3$ and 28.7 K, respectively, as compared to only 16.5 K in $\text{GdRu}_2\text{Al}_{10}$), weak ordered moment, and paradoxical anisotropy are difficult to reconcile with conventional views of KIs.

A general survey will be given of results obtained by a variety of neutron scattering techniques, especially regarding the relationship between the aforementioned static AFM order and the magnetic excitation spectra obtained from inelastic, unpolarized as well as polarized, neutron experiments. In the absence of AFM order, the low-temperature spectra measured for $\text{CeFe}_2\text{Al}_{10}$ exhibit a “spin-exciton”-like component reminiscent of archetype KI compounds like SmB_6 or YbB_{12} . Further insight gained from studying the evolution of the magnetic response in Ru-Rh solid solutions, or upon the application of a magnetic field, will also be discussed.

連絡先：岩佐 和晃 (795-6486)

☆ 14:45 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。

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