

Magnetic order, magnetic correlations and spin dynamics in pyrochlore magnets

A. Yaouanc and P. Dalmas de Réotier
CEA and University Joseph Fourier, Grenoble, France

May 2012

Magnetic compounds crystallising in the pyrochlore crystal structure are now used as a playground to discover new physical properties. We recall for example the spin-ice compounds for which an analogy has been drawn with water ice. It is presently debated whether their magnetic excitations can be described with magnetic monopoles.

In this talk I will discuss the physics of the pyrochlore insulators $\text{Tb}_2\text{Sn}_2\text{O}_7$, $\text{Yb}_2\text{Sn}_2\text{O}_7$ and $\text{Er}_2\text{Ti}_2\text{O}_7$ using data obtained from magnetic susceptibility, specific heat, μSR and Mössbauer spectroscopies, as well as neutron diffraction and neutron spin echo measurements. While for these three compounds neutron magnetic reflections are observed at low temperatures, surprisingly the ground state is dynamical in nature.