**Università di Perugia**
**Dipartimento di Fisica**
Via A. Pascoli, Perugia

# AVVISO di SEMINARIO

La Dr. Zoe Budrikis, dell' University of West Australia, Perth, terrà il seminario intitolato:

## *"Effects of disorder on the field-induced dynamics of artificial spin ice"*

**Martedì 12 aprile 2011, ore 12**
**Aula riunioni CNR (IV piano)**

Tutti gli interessati sono invitati a partecipare.

**ABSTRACT**

Artificial spin ices serve as model frustrated systems. They consist of arrays of sub-micron magnetic islands arranged in a geometry such that not all pairwise interactions can be simultaneously satisfied. Because of their scale, their configuration states can be imaged, using MFM, for example. They are athermal and dynamics are induced by an external magnetic field. The field-induced dynamics have received much attention, both experimental and theoretical (see, e.g., [1, 2]), but these studies have not dealt explicitly with the effects of disorder.
We show through numerical simulations that disorder, introduced as a spread in island switching fields, has a strong effect on dynamics. In particular, a disordered system can reach lower energy states than a perfect system can, even though the energy landscape is unchanged. We propose a network picture for the configurational phase space of the system and show that this picture clearly distinguishes disordered and undisordered ices. This highlights the advantages of a network picture in providing tools for quantifying the effects of disorder as well as that the effect of disorder is fundamental.

1. X. Ke, J. Li, C. Nisoli, P. E. Lammert, W. McConville, R. F. Wang, V. H. Crespi, and P. Schiffer, Phys. Rev. Lett. 101, 037205 (2008).
2. Z. Budrikis, P. Politi, and R. L. Stamps, Phys. Rev. Lett. 105, 017201 (2010).