

## **PhD Position Announcement Coventry/Madrid**

### **“Statistical Physics of Disordered Systems”**

We announce the position of a PhD fellowship in the area of *Statistical Physics of Disordered Systems*. The position will lead to an adjoint doctorate (co-tutelle) between the Applied Mathematics Research Centre (AMRC) of Coventry University, United Kingdom, and the Department of Theoretical Physics I of the Complutense University of Madrid, Spain.

#### **Contact:**

Prof. Victor Martin-Mayor: [vicmarti@ucm.es](mailto:vicmarti@ucm.es)

Dr. Nikolaos Fytas: [ab5298@coventry.ac.uk](mailto:ab5298@coventry.ac.uk)

#### **Subject matter:**

The candidate is expected to work at the cutting edge of the international research in the field. The focus will be on a numerical approach. This includes learning/developing the most advanced numerical algorithms that will be implemented on large supercomputing facilities, or even in dedicated special-purpose machines, such as the Janus computer (<http://bifi.es/en/infrastructures/scientific-equipment/janus>) and its successor, Janus II, that will start operating in Summer 2014.



*Figure 1: Janus rack.*

The proposed research will focus studying the critical behavior of the random-field Ising model (RFIM), mainly using extensive simulations at both positive and zero temperature. The RFIM is one of the archetypal disordered systems, extensively studied due to its theoretical interest, as well as its close connection to experiments in hard and soft condensed matter systems [1]. A plethora of problems, ranging from hysteresis in magnetic systems to fluids in porous media, can be studied via the RFIM, establishing it as one of the main prototypic models used for the study of collective behavior in the presence of quenched disorder.

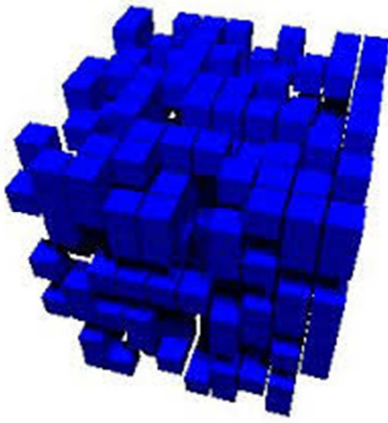


Figure 2: Ground-state picture of a random-field magnet.

The work proposed here is based on recent advances discussed in Ref. [2].

[1] T. Nattermann and D.P. Belanger in Spin Glasses and Random Fields, ed. A.P. Young, (World Scientific, Singapore, 1998).

[2] N.G. Fytas and V. Martin-Mayor, Phys. Rev. Lett. **110**, 227201 (2013).

### **Requirements:**

At the starting day, the PhD candidate should hold a Masters' degree in Physics. Experience in the field of disordered systems would be also desirable.

### **Conditions:**

The PhD candidate is expected to spend his/her time at both Coventry and Madrid, with no actual preference on the starting place and according to a plan of studies to be agreed. The official starting date may be either September 2014 or one of the following months during the forthcoming year 2015: January, April, or September. The successful candidate must have a good knowledge on Statistical Physics and familiarization with computer simulation methods.

It is expected that the candidate applies for a Spanish FPU fellowship to cover for about half of the time of the studentship – for more information refer to: <https://sede.educacion.gob.es/catalogo-tramites/profesores/formacion/universitarios/fpu.html>-. However, a full 3-years funding is available from Coventry University as a fallback solution, with a net salary of approximately 13800 pounds per year, including health insurance.