

Special Physics seminar

Tuesday, 19th April 2011 at 16h15
(coffee at 16h00)

Limpersberg
Room BS104

Talk by Dr. Jacob Stevenson
Johannes Gutenberg University Mainz

Domain walls and Schramm-Loewner evolution in the random-field Ising model

The concept of Schramm-Loewner evolution provides a unified description of domain boundaries of many lattice spin systems in two dimensions, possibly even including systems with quenched disorder. Here, we study domain walls in the random-field Ising model. Although, in two dimensions, this system does not show an ordering transition to a ferromagnetic state, in the presence of a uniform external field spin domains percolate beyond a critical field strength. Using exact ground state calculations for very large systems, we examine ground state domain walls near this percolation transition finding strong evidence that they are conformally invariant and satisfy the domain Markov property, implying compatibility with Schramm-Loewner evolution (SLE_ $\{\kappa\}$) with parameter $\kappa = 6$. These results might pave the way for new field-theoretic treatments of systems with quenched disorder.

Next regular Physics Seminars

- **Tuesday, 26th April 2011:**
Belval, 16:15 **Levent Gütay, UL**
"Epitaxy and optical characterization of Cu(In,Ga)Se₂ solar cells absorbers"
- **Tuesday, 10th May 2011:**
Campus Limpertsberg, 16:15 **Kurt Binder, U Mainz**
"Computer simulation of critical phenomena and phase behavior of fluids"
- **Tuesday, 24th May 2011:**
Belval, 16:15 **Dr. German Olivares, UL**
"Change detection analysis in geodesic time series"
- **Tuesday, 14th June 2011:**
Campus Limpertsberg, 16:15 **Dominik Berg, UL**
"The formation and characterization of kesterite thin film solar cells – challenges and solutions"
- **Tuesday, 28th June 2011:**
Belval, 16:15 **Prof. Dr. M. Farle, U Duisburg-Essen**
"Influence of nanoparticle shapes and morphologies on magnetic hardness"