

ATELIER «NOUVELLES AVENUES EN PROCESSUS SPATIAUX ALÉATOIRES»  
11–15 MAI 2009

WORKSHOP “NEW DIRECTIONS IN RANDOM SPATIAL PROCESSES”  
MAY 11–15, 2009

## Ising Euclidean fields and cluster area measures

CHUCK NEWMAN

Department of Mathematics  
Courant Institute, NYU  
251 Mercer Street  
New York, NY 10012  
USA

`newman@cims.nyu.edu`

---

I will discuss a representation for the magnetization field of the critical two-dimensional Ising model in the scaling limit as a random field using renormalized area measures associated with SLE (Schramm–Loewner Evolution) clusters. The renormalized areas come from the scaling limit of critical FK (Fortuin–Kasteleyn) clusters and the random field is a convergent sum of the area measures with random signs. The representation is based on the interpretation of the lattice magnetization as the sum of the signed areas of clusters. If time permits, potential extensions, including to three dimensions, will also be discussed.

The talk will be based on *joint work with F. Camia* (arXiv :0812.4030 ; to appear in PNAS) and on *work in progress with F. Camia and C. Garban*.