

ATELIER « SYSTÈMES DÉSORDONNÉS : VERRES DE SPIN »
8–13 JUIN 2009

WORKSHOP “DISORDERED SYSTEMS: SPIN GLASSES”
JUNE 8–13, 2009

Graphical representations and cluster algorithms : Theoretical and
Computational Considerations

JONATHAN MACHTA

Department of Physics
University of Massachusetts Amherst
Amherst, MA 01003-3720
USA

machta@physics.umass.edu

Graphical representations and associated cluster algorithms for frustrated systems will be discussed. The two-replica graphical representation and associated cluster algorithm will be introduced and examined. Based on numerical studies of the $\pm J$ Ising model in three dimensions and on rigorous results for the SK model, it is concluded that ordering corresponds to the appearance of two percolating clusters of unequal densities.