Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Monte Carlo simulation of giant magnetoresistance[1] GASTON
BARBERIS, IFGW - Unicamp, 13083-970 Campinas, SP, Brazil — Monte Carlo
method was used to simulate giant magnetoresistance in solids. A square lattice,
composed by Ising spins, was generated by the usual Monte Carlo method, using pe-
riodic conditions for the borders. Resistivity was measured considering the number
of clusters connected between right and left sides of the lattice, with and without
applied magnetic field. The calculation of the number and surface of the connecting
clusters was calculated using the Hoshen-Kopelman algorithm [1]. As we developed
previously pseudorandom non-periodic numbers [2], which allows that the sizes of
the clusters as big as necessary, and the steps near the transition as small as de-
sired. This allowed a detailed study near the percolation region, over and below
the magnetic transition. Three dimensional lattices, and models other than Ising
for the spin coupling are natural extension of the calculation. [1]J. Hoshen and R.
Kopelman, Phys. Rev. B14, 3438 (1976) [2]G.E. Barberis,Physica B 398, 468 (2007)

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Date submitted: 21 Nov 2007   Electronic form version 1.4