T97/151
http://www-spht.cea.fr/articles/T97/151/
cond-mat/9712034

Folding of the Triangular Lattice in the Face Centered Cubic lattice with quenched random spontaneous curvature

S. Mori[1]

Department of Physics, School of Science, Kitasato University, Kitasato 1-15-1,Sagamihara, Kanagawa 228, Japan

E. Guitter[2]

Service de Physique Théorique, CEA/DSM/SPhT - CNRS/SPM/URA 2306
CEA/Saclay, F-91191 Gif-sur-Yvette Cedex, FRANCE

We study the folding of the regular two–dimensional triangular lattice embedded in the regular three–dimensional Face Centered Cubic lattice, in the presence of quenched random spontaneous curvature. We consider two types of quenched randomness: (1) a "physical" randomness arising from a prior random folding of the lattice, creating a prefered spontaneous curvature on the bonds; (2) a simple randomness where the spontaneous curvature is chosen at random independently on each bond. We study the folding transitions of the two models within the hexagon approximation of the Cluster Variation Method. Depending on the type of randomness, the system shows different behaviors. We finally discuss a Hopfield-like model as an extension of the physical randomness problem to account for the case where several different configurations are stored in the prior pre-folding process.

J. Phys. A 30, L829-L838 (1997)

Letter to the editor

[1] Email: mori@sci.kitasato-u.ac.jp

[2] Email: guitter@spht.saclay.cea.fr