

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Micro-canonical Monte Carlo study of spin wave excitations in 2D XY model¹ SMITA OTA², Institute of Mathematics and Applications, Bhubaneswar 751022 — We have carried out micro-canonical Monte Carlo simulation of 2D XY model in a 30x30 lattice using periodic boundary conditions. In this micro-canonical Monte Carlo simulation, the energy is the input quantity and the temperature of the system is obtained from the simulations. Spin waves and bound vortex excitations dominate in the 2D XY model below the topological vortex unbinding transition. We have studied the spin waves from the energy distribution of an individual spin in the 2D XY model. The most probable spin wave energy corresponds to the maximum in the energy distribution. The probability of the spin wave excitation is found to be reduce exponentially, by an order of magnitude as the temperature increases to the topological transition.

¹The author acknowledges financial support from DST, New Delhi, India.

²Oral presentation

Smita Ota
Institute of Mathematics and Applications, Bhubaneswar 751022

Date submitted: 28 Sep 2010

Electronic form version 1.4