

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Spin waves in 2D classical XY-model SNEHADRI OTA, Institute of Physics, Bhubaneswar, SMITA OTA, Institute of Mathematics and Applications, Bhubaneswar — The description of phase transition in the microcanonical formalism has gained growing interest in recent years for the calculation of thermodynamic properties of physical systems and microcanonical entropy.¹ We have carried out micro-canonical Monte Carlo simulations of the 2D XY-model using periodic boundary conditions.^{2,3} In case of microcanonical Monte Carlo simulation some thermodynamic-like relations apply that allow definition of variable by averaging, specifically, the temperature. The energy distributions of the spins have been obtained for the the Kosterlitz-Thouless situation.⁴ In this case, the energy distribution of vortices show features that is due to spin waves, which agrees with the spin wave theory which predicts that $E_{sw} = -2 + T/2$. References: [1] H.Behringer and M.Pleimling, Phys.Rev.E **74** (2006) 11108 [2] M.Creutz, Phys.Rev.Lett. **50** (1983) 1411 [3] S Ota and S B Ota, Phys.Lett.A **367** (2007) 35 [4] J B Kogut, Rev.Mod.Phys. 51 (1979) 659

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Date submitted: 28 Dec 2007

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