

1123-82-19

Tayyab Nawaz* (tnawaz2@illinois.edu), Room 250, 1409 W. Green Street, Urbana, IL 61801, and **Kay Kirkpatrick**. *Some recent results on asymptotics of $O(N)$ -model.*

I will discuss the mean-field classical N -vector models for $N \geq 1$, where N is an integer. I will discuss recent work with Kay Kirkpatrick on asymptotic behavior near the phase transition. We used large deviations, Stein's method and bounded properties of ratio of the modified bessel function of first kind to study the physical quantities such as susceptibility and magnetization. Some special cases are XY model ($N = 2$), Heisenberg model ($N = 3$) and Toy model of the Higgs sector ($N = 4$). (Received July 22, 2016)