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Phase transition and correlations in a system with T-gradients

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The QGP fireball is a temporally fast-evolving and spatially highly nonuniform system. Instantaneously, the spatial temperature gradients are huge and will have significant influence on the spatial distribution of QCD order parameter and its correlations, but related studies are inadequate.
Based on the local equilibrium assumption and the Markov assumption, we will discuss the phase transition in an instantly steady 2D disk system with temperature gradients. We will present the spatially-nonuniform-temperature effects on the phase transition temperature, the eigen-modes of the fluctuations, and the nonlocal and local correlations via a simplified Ising-like model [1].

[1] Lijia Jiang, Tao Yang and Jun-Hui Zheng, in preparation.

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