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Non-Gaussian fluctuation in stochastic diffusion equation

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We study a description of non-Gaussian fluctuations in stochastic diffusion equation
which is defined by introducing a noise term into diffusion equation.
Usually, the noise term in stochastic diffusion equation is assumed to be a Gaussian white noise.
With this assumption, the fluctuation of the particle number in equilibrium becomes of Gaussian.
On the other hand, experimental results on fluctuations of conserved charges in heavy ion collisions
suggest that the fluctuations approach the equilibrated one having nonzero non-Gaussian
cumulants in the diffusive process in hadronic stage.
To describe this diffusive process by stochastic diffusion equation,
this formalism has to be modified to have non-Gaussian fluctuations in equilibrium.
We investigate modifications of the stochastic diffusion equation to allow for nonzero
non-Gaussian fluctuations in equilibrium, and compare the time evolution of non-Gaussian
cumulants described by the equation with the one obtained in the diffusion master equation.

On behalf of collaboration:

NONE

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