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Effects of Momentum Cuts on Higher Order Cumulants of Conserved Charges

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We discuss the effects of momentum cuts in the fluctuations of conserved charges in the following contexts:

1) Kinematic momentum cuts of pions in electric charge fluctuations.
2) Soft momentum scale in net-baryon number fluctuations at chiral crossover.

In 1),we show that the normalized kurtosis $\kappa\sigma^2$ is substantially reduced by the p_T cut because it suppresses the effect of Bose statistics.
The reduced value of $\kappa\sigma^2$ is found to be consistent with the recently measured data by PHENIX [1].

In 2), using the functional renormlization group (FRG) method, we calculate the higher order cumulants of net-baryon number as a function of infrared momentum scale k in a chiral quark-meson model [2]. We show that the characteristic negative values of the sixth order cumulants at vanishing μ and fourth order one at large μ turn to positive if the momentum scale below $2m_\pi$ are not taken into account.

[1] A. Adare et al., (PHENIX Collaboration), arXiv:1506.07834.

[2] K. Morita and K. Redlich, Prog. Exp. Theor. Phys. **2015**, 043D03 (2015).

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