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## **Study of fluctuations and correlations within finite volumes in 2+1 flavor Polyakov–Nambu–Jona-Lasinio model**

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The hot and dense matter created through the high-energy heavy ion collision experiments possesses a very rich phase structure characterized by the confining and chiral properties. In these experiments, the matter is produced within a finite volume, finiteness of which depends on the size of the colliding nuclei, the centre of mass energy ( $\sqrt{s}$ ) and the centrality of collisions. The effect of finiteness of the system sizes have important consequences on the system's phase structure. Fluctuations and correlations of conserved charges on the other hand are sensitive indicators of the transitions occurring in such strongly interacting systems and are therefore needed to be studied extensively. Here, we intend to present the analysis under the framework of 2+1-flavor Polyakov–Nambu–Jona-Lasinio model with different system sizes revealing important consequences.

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