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Event-by-event Multiplicity Fluctuations in Pb-Pb Collisions at LHC Energies in ALICE

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Fluctuations of various observables in heavy-ion collisions at ultra-relativistic energies have been extensively studied as they provide important signals regarding the formation of Quark Gluon Plasma. Because of the large number of produced particles in each event, a detailed study of event-by-event multiplicity fluctuation has been proposed as one of the signatures of the phase transition. In addition, understanding of the multiplicity fluctuations is essential for other event-by-event measurements. In this presentation, we have calculated the scaled variance ($\omega = \sigma^2/\mu$) of the charged particle multiplicity distributions as a function of centrality in Pb-Pb collisions at LHC energies. Here, μ and σ denote the mean and the width of the multiplicity distributions, respectively. The trend of scaled variances as a function of centrality will be presented and discussed. Volume fluctuations play an important role when measuring the multiplicity fluctuations. These will be discussed. The results are expected to provide vital input to theoretical model calculations.

On behalf of collaboration:

ALICE

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