

Strangeness in Quark Matter 2019



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Higher order net-proton number cumulants dependence on the centrality definition and other spurious effects

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We study the dependence of the normalized moments of the net-proton multiplicity distributions on the definition of centrality in relativistic nuclear collisions at a beam energy 7.7 GeV. Using the UrQMD model as event generator we find that the centrality definition has a large effect on the extracted cumulant ratios. Furthermore we find that the finite efficiency for the determination of the centrality introduces an additional systematic uncertainty. Finally, we quantitatively investigate the effects of event-pile up and other possible spurious effects which may change the measured proton number. We find that pile-up alone is not sufficient to describe the data and show that a random double counting of events, adding significantly to the measured proton number, effects mainly the higher order cumulants in most central collisions.

Collaboration name

Track

QCD phase diagram and critical point

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