

# Comparative study for non-statistical fluctuation of net proton, baryon, and charge multiplicities

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## Abstract:

We use the non-statistical fluctuation to explore the higher moment singularities of net proton, baryon and charge multiplicities in the relativistic Au+Au collisions at  $\sqrt{s_{NN}}$  from 11.5 to 200 GeV. The parton and hadron cascade model PACIAE is employed to generate the real events in different rapidity and transverse momentum windows. Non-statistical moments are then calculated as the difference between the moments derived from real events and the ones from mixed events, which are constructed by combining particles randomly selected from different real events. The discrepancies among higher moment singularities of above three kind net observables are discussed.