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Charge-to-Neutral fluctuation in AuAu $\sqrt{s_{NN}} = 200$ GeV collision at RHIC

Content :

Event-by-event fluctuation of the ratio of multiplicities of charged-to-neutral particles at forward rapidity in AuAu collision at $\sqrt{s_{NN}}=200$ GeV has been studied. As the detected charged and neutral particles are mostly from the charged pions and the decay of neutral pions respectively, this analysis addresses isospin fluctuation of pions. Studying net dynamical fluctuation of pion multiplicity we can search for the signals of any anomalous isospin fluctuation. Such a phenomena is predicted to occur for a system going through QCD chiral phase transition [1][2]. Our study in the STAR experiment at top RHIC energy includes multiplicity measurements of charged particles and photons using the Forward Time Projection chamber(FTPC) and the Photon Multiplicity Detector(PMD) respectively. We have studied fluctuation variables like $\nu_{\text{dyn}; ch, \gamma}$ and $r_{m,1}$ for both real and mixed events and compared with results from a DCC model implemented using HIJING. Status of this analysis for BES programme at RHIC will also be discussed.

Ref:-

- [1] J.D. Bjorken, What lies ahead?, SLAC-PUB-5673, 1991.
- [2] J.P. Blaizot, A. Krzywicki, Phys. Rev. D 46 (1992) 246.

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