Title:	Characterizing Quark Gluon Plasma through particle ratio
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Abstract:	According to Big-Bang theory, at the earliest of its expansion, universe existed as QGP. As it cooled down, the deconfinement-confinement phase transition occurred and hadrons were formed. Study about this kind of a stage can lead us to understand the early stages of universe formation. It can also give us some constraints on the Standard Model which can give us insights to the formation of theories beyond the Standard Model. The transforma- tion of matter at high enough energies, from nucleons to constituent quarks and gluons has been very interesting and equally very challenging. Even though the energy scale is quite challenging, in heavy ion collisions we are trying to create a similar system and studying various properties. Since the multiplicity of produced particles is an important quantity to characterise the evolving system and its event to event fluctuation may provide a distinct signal of the phase transition from hadron gas to QGP. This signal is to be found using v Dynamics. Higher moments of a distribution can give important information about the asymmetry of the system. Considering the distributions of conserved quantities in this system, higher moment analysis provide a scope to under- stand some existing problems. In this thesis we are looking at the higher moments of such multiplicity distributions and v Dynamics analysis to reveal some dynamical fluctuations. Study of higher moments like kurtosis and skewness of these multiplicity distributions on an event-by-event basis will provide valuable information on the dynamic state of the system just after the collision. From these higher moments we can also calculate the susceptibilities of the system which is very useful in determining whether there are any fluctuations due to QGP formation or it's the Hadron Phase fluctuations. These studies are geometrical studies i.e they are characterised using centrality or number of participating nucleons (hN part i). √Charged particle multiplicity distributions are studied for Pb-Pb collisions at S N N = 2.76 TeV.
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