Contribution ID : **113** Type : **Oral Presentation**

Re-visiting the J/Ψ suppression for quark-gluon plasma formation in small systems

Wednesday, 16 November 2022 16:30 (20)

There have been different proposals for signatures of the formation of a deconfined thermal medium(quark-gluon plasma) in heavy-ion collisions. The suppression of J/Ψ in the deconfined medium is one of the cleanest signals among many other signatures like elliptic flow, jet quenching etc. However, there are very few signals effective for the formation of QGP in small systems such as the systems produced in proton-proton, proton-deuteron and deuteron-deuteron collisions. Here the medium formed is shown to be very short-lived compared to that formed in heavy ion collision as the system undergoes 3-dimensional spherical expansion from the very beginning of the hydrodynamic phase. We model the small systems for different values of sizes of the system after the Gubser flow solution and we infer that the expansion phase is smaller by a factor of at least 2. We then calculate the dissociation probability of J/Ψ through the non-adiabatic evolution of the state using the time-dependent perturbation theory for different values of thermalization time. We find no significant dissociation of J/Psi in small systems in contrast to the systems produced in Au-Au/Pb-Pb collisions, thereby establishing that quarkonia(J/Ψ) suppression may not be a successful signature for the formation of the thermal medium for proton-proton/proton-deuteron or deuteron-deuteron collisions.

Primary author(s) : BAGCHI, Partha (Tsinghua University, Beijing); Dr MISHRA, Ananta Prasad (Independent Researcher)

Presenter(s) : BAGCHI, Partha (Tsinghua University, Beijing)

Session Classification : Day 2: Session 4

Track Classification : Heavy flavor and Quarkonium production