



Contribution ID: 83

Type: Oral Presentation

High transverse momentum quarkonium production and dissociation in heavy ion collisions

Tuesday, August 14, 2012 6:05 PM (20 minutes)

We calculate the yields of quarkonia in heavy ion collisions at RHIC and the LHC as a function of the transverse momentum. We focus on the consistent implementation of dynamically calculated nuclear matter effects, such as coherent power corrections, cold nuclear matter energy loss, and the Cronin effect in the initial state, and collisional dissociation of quarkonia in the final state as they traverse through the QGP. This formalism has been previously used to successfully describe the phenomenology of open heavy flavor (B and D mesons) both at RHIC and the LHC. We will briefly review the comparison with new open heavy flavor data and describe the extension of the calculation for quarkonium production. Based upon non-relativistic quantum chromodynamics, our calculations include both color-singlet and color-octet contributions and feed-down effects from excited states. Theoretical results are presented for J/ψ and Υ and compared to experimental data where applicable. At RHIC, a good description of the high- p_T J/ψ modification observed in central Cu+Cu and Au+Au collisions can be achieved within the model uncertainties. We find that J/ψ measurements in proton(or deuteron)-nucleus reactions are needed to constrain the magnitude of cold nuclear matter effects, and new data from d+Au collisions at RHIC already puts a strong limit on the Cronin enhancement for J/ψ . At the LHC, a good description of the experimental data can be achieved only in mid-central and peripheral Pb+Pb collisions. The large five-fold suppression of prompt J/ψ in the most central nuclear reactions suggests the presence of thermal effects at the level of the quarkonium wavefunction, even at large transverse momentum.

Primary author: Dr SHARMA, Rishi (TRIUMF)

Co-author: Dr VITEV, Ivan (LANL)

Presenter: Dr SHARMA, Rishi (TRIUMF)

Session Classification: Parallel 2D: Heavy Flavor & Quarkonia (Chair J.-P. Blaizot)

Track Classification: Heavy flavor and quarkonium production