



Contribution ID: 666

Type: **Poster**

Quarkonia Disintegration due to time dependence of the $q\bar{q}$ potential in Relativistic Heavy Ion Collisions

Tuesday 29 September 2015 16:30 (2 hours)

Rapid thermalization in ultra-relativistic heavy-ion collisions leads to fast changing potential between a heavy quark and antiquark from zero temperature potential to the finite temperature one. Time dependent perturbation theory can then be used to calculate the survival probability of the initial quarkonium state. In view of very short time scales of thermalization at RHIC and LHC energies, we calculate the survival probability of J/ψ and Υ using sudden approximation. Our results show that quarkonium decay may be significant even when temperature of QGP remains low enough so that the conventional quarkonium melting due to Debye screening is ineffective.

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Session Classification: Poster Session

Track Classification: Quarkonia