Abstract

Quarkonia production with the STAR experiment at RHIC

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Quarkonia production is a crucial probe for the understanding of QCD and the identification and measurement of the properties of the Quark Gluon Plasma (QGP), produced in heavy ion collisions.

Quarkonia production and their transverse momentum dependence, as well as their dependence on charged multiplicity in p+p collisions give essential input to models towards understanding of their production and its relation to soft particle

production.

Quarkonia production in p+A and d+A collisions allow the

study of cold nuclear matter effects while all small systems p+p, p+A

and d+Au and light nuclei collisions contribute to our understanding of

quarkonia production in heavy A+A collisions.

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Quarkonia production in collisions of heavy nuclei depends on a large

number of effects, among which feed down, nuclear absorption,

coalescence from c and cbar quarks at freeze out and dissociation via

color screening when their dissociation temperature is lower than the

temperature of the QGP phase.

As a consequence of the latter, the hierarchy of quarkonia suppression

has been proposed as a signature of the QGP phase also

allowing measurement of its Temperature.

In this talk we will show latest results on J/Psi and Upsilon production

in p+p collisions at 200 and 500 GeV, p+Au  and Au+Au collisions at 200

GeV from the STAR experiment at RHIC. In particular, for the small systems we will discuss an observed multiplicity dependence of the production whilein Au+Au collisions we will present the nuclear modification factor of J/Psi as well as of Upsilon from combined $\mu\mu$ and $ee$ channels.

The results will be compared to LHC data and to theoretical models.