



Contribution ID: 26

Type: **not specified**

## **$J/\psi$ reaction mechanisms and suppression in the nuclear medium**

*Wednesday, May 16, 2012 2:10 PM (20 minutes)*

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Abstract:<br>

Recent studies of the interaction of vector mesons with nuclei make possible and opportune the study of the interaction of the  $J/\psi$  with nuclei and the investigation of the origin of the  $J/\psi$  suppression in its propagation through a nuclear medium. We observe that the transition of  $J/\psi N$  to  $VN$  with  $V$  being a light vector,  $\rho$ ,  $\omega$ ,  $\phi$ , together with the inelastic channels,  $J/\psi N \rightarrow \bar{D}\Lambda_c$  and  $J/\psi N \rightarrow \bar{D}\Sigma_c$  leads to a particular shape of the inelastic cross section.

Analogously, we consider the mechanisms where the exchanged  $D$  collides with a nucleon and gives  $\pi\Lambda_c$  or  $\pi\Sigma_c$ . The cross section has a peak around  $\sqrt{s} = 4415$  MeV, where the  $J\psi N$  couples to a resonance predicted recently. We study the transparency ratio for electron induced  $J/\psi$  production in nuclei at about 10 GeV and find that 30 - 40% of the  $J/\psi$  produced in heavy nuclei are absorbed inside the nucleus. This ratio is in line with depletions of  $J/\psi$  through matter observed in other reactions.

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**Session Classification:** Charm Production Session