

# $J/\psi$ Suppression in High-Energy Heavy-Ion Collisions

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The suppression of  $J/\psi$  production in high-energy Pb-Pb collisions has been suggested as a signal for the production of the quark-gluon plasma. Recent experimental observations of an anomalous suppression of  $J/\psi$  production in high-energy Pb-Pb collisions have led to a flurry of activities. Different mechanisms of absorption have been suggested, including the production of the quark-gluon plasma. However, previous theoretical studies of  $J/\psi$  suppression in heavy-ion collisions have been hindered by the scant knowledge of the  $\pi$ - and  $\rho$ -induced  $J/\psi$  dissociation cross sections. Recently, these cross sections have been calculated with the Barnes and Swanson Model [1] which provides a reliable estimate of the dissociation cross sections. The Model gives a small dissociation cross section for  $\pi$  at a high threshold but a large cross section for  $\rho$  with no threshold [2]. We shall report on the theoretical analyses of  $J/\psi$  absorption probabilities and the importance of the dissociation of  $J/\psi$  by light meson collisions. Our results indicate that this mechanism should be evaluated and incorporated into Monte Carlo simulations before any final conclusions can be reached regarding the interpretation of the anomalous  $J/\psi$  suppression in Pb-Pb collisions as an indication of the production of the quark-gluon plasma.

1. T. Barnes and E. S. Swanson, Phys. Rev. D46, 131 (1992).
2. C. Y. Wong, E. S. Swanson, and T. Barnes, hep-ph/99120431 and nucl-th/0002034.

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