Mott dissociation of light and open-charm mesons at the QCD phase transition and anomalous J/ψ suppression

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Abstract

We investigate the in-medium modification of the charmonium breakup processes due to the Mott effect for light (π, ρ) and open-charm (D, D^*) mesons at the chiral phase transition. A model calculation for the process $J/\psi + \pi \to D + \bar{D}^* + h.c.$ will presented [1] which demonstrates that threshold effects in the thermal averaged breakup cross section can be explained as a Mott transition where quark-antiquark bound states enter the continuum of resonant (unbound but correlated) states at the QCD phase transition. Applications to charmonium production in heavy-ion collisions within a modified Glauber model calculation and the phenomenon of anomalous J/ψ suppression in the CERN NA50 experiment [2] will discussed.

[1] D. Blaschke, G. Burau, Yu. L. Kalinovsky, nucl-th/0006071 [2] M. C. Abreu et al., NA50 Collaboration, Phys. Lett. B 477 (2000) 28

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