

## Constraining Cold Nuclear Matter Effects on $J/\psi$ production in Au +Au Collisions

Recent results from PHENIX on  $J/\psi$  production in d+Au collisions have shown that  $J/\psi$ 's are significantly suppressed at forward rapidity. This has interesting implications for  $J/\psi$  suppression in Au+Au collisions, and may provide an answer to the  $J/\psi$  puzzle. We try to constrain these cold nuclear matter (CNM) effects by fitting the EPS09 parametrization plus a break-up cross section to the PHENIX data in each rapidity range. In contrast to previous work, a stronger than linear dependence of initial-state shadowing on the nuclear thickness is employed to better fit the d+Au data. We extrapolate our results to predict the CNM effects on  $J/\psi$  production in Au+Au collisions and compare with the PHENIX results. We find that some  $J/\psi$  suppression remains in central collisions after factoring out the CNM effects and that the forward and midrapidity data are now in agreement within uncertainties.

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