

Cold Nuclear Matter Effects on J/ψ as Constrained by Deuteron-Gold Measurements at $\sqrt{s_{NN}} = 200$ GeV in the PHENIX Experiment

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A new analysis of J/ψ production yields in deuteron-gold collisions at $\sqrt{s_{NN}} = 200$ GeV has been performed using data taken by the PHENIX experiment in 2003. The high statistics proton-proton J/ψ data taken in 2005 is used to improve the baseline measurement and thus construct updated cold nuclear matter modification factors (R_{dAu}). A suppression of J/ψ in cold nuclear matter is observed as one goes forward in rapidity (in the deuteron-going direction), corresponding to a region more sensitive to initial state low- x gluons in the gold nucleus. The measured nuclear modification factors will be compared to theoretical calculations of nuclear shadowing to which a J/ψ (or precursor) break-up cross-section is added. Break-up cross-sections are obtained by fitting these calculations to the data using EKS and NDSG shadowing. Projections of these cold nuclear matter effects to copper-copper and gold-gold collisions will also be presented and compared to the latest PHENIX data.