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Low Mass Vector Meson Production in d+Au collisions at $\sqrt{s_{NN}} = 200$ GeV with the PHENIX Detector at RHIC

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Low mass vector meson (ω , ρ , and ϕ) production in high-energy heavy-ion collisions provides key information on the hot and dense state of the strongly interacting matter produced in such collisions. They are sensitive to the medium-induced effects such as strangeness enhancement, modification of the resonance line shapes and their relative production rates in leptonic and hadronic decay modes linked to the chiral symmetry restoration. Measurements in the dilepton channels are especially interesting since leptons interact only electromagnetically, thus carrying the information from their production phase directly to the detector. Results on light vector meson production in p+p collisions serve as a reference for heavier collision systems. Measurements in d+Au are used to quantify the cold nuclear matter effects which are critical to interpreting the heavy ion results.

The PHENIX detector provides the capabilities to measure the light vector meson production in a wide range of transverse momentum and rapidity to study various cold nuclear effects such as soft multiple parton rescattering and modification of the parton distribution functions in nuclei.

The PHENIX collaboration at RHIC collected $\sim 60nb^{-1}$ in d+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. In this poster we report recent PHENIX results for $(\omega + \rho)$ and ϕ mesons invariant production spectra and nuclear modification factors from this data.

On behalf of collaboration:

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