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A structure based study of initial state fluctuations in D-Au collisions MICHAEL KORDELL, ABHIJIT MAJUMDER, Wayne State University — We study the spectrum and correlation between nucleon density fluctuations in the Au nucleus as probed in Deuteron(D)-Gold(Au) collisions at the Relativistic Heavy-Ion Collider (RHIC). Modeling the D with both hard sphere and Hulthen forms, we study the effect of various classical nucleon density distributions for the Au nucleus such as hard sphere, Gaussian and Woods-Saxon, as well as quantum distributions such as shell model based density distributions. Various means to incorporate the short distance hard sphere repulsion and resulting nucleon-nucleon correlation within shell-model based calculations will also be explored. In order to study initial state fluctuations, separated from any final state effects, we will focus on hard probes of initial density such as high transverse momentum hadron production in comparison with that from proton-proton collisions. Special emphasis will be placed on the new D-Au data from the PHENIX experiment at RHIC.

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