Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Photoproduction of J/ψ-mesons off deuteron in d+Au Ultra-Peripheral Collisions using the STAR detector ZHOUDUNMING TU, Brookhaven National Lab, STAR COLLABORATION — Nuclear dynamics at short distances among nucleons is one of the most outstanding phenomena in nuclear physics. Understanding the role of QCD in generating nuclear forces is important for uncovering the underlying physics of Short-Range Correlations (SRCs). In recent years, SRCs have been observed from light to heavy nuclei using fixed target experiments at Jefferson lab via high energy electron-nucleus scattering. It has been recently suggested that the exclusive J/ψ production of electron-deuteron scattering at the Electron-Ion Collider (EIC) would provide new insights into the SRCs, in particular from the aspect of the underlying quark-gluon dynamics. In the absence of electron-nucleus data from an EIC, data from deuteron-gold (d+Au) ultra-peripheral collisions (UPCs) recorded by the STAR detector at the Relativistic Heavy Ion Collider can be used as a proxy to test various techniques and hypotheses. The coherent and incoherent cross sections of J/ψ photoproduction in d+Au UPC events are measured, and the implications of the results will be discussed. The reported results will be a first-time measurement of J/ψ-meson photoproducton off deuteron in high energy collisions.

Zhoudunming Tu
Brookhaven National Lab

Date submitted: 22 Jun 2020 Electronic form version 1.4