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Studies of the e+A physics at an EIC LIANG ZHENG, Brookhaven National Lab & Central China Normal University, EIC SCIENCE TASK FORCE TEAM — It is the ultimate long term quest of nuclear physics to understand the emergence of nuclear structure and dynamics in terms of quarks and gluons, the basic constituents in Quantum Chromo-Dynamics (QCD). Although past experiments were successful in determining the quark behavior in the nucleon and light nuclei, the gluons that determine the essential features of the strong interactions, remain largely unexplored. Of great interest is especially the high parton density (small x) regime where gluon self-interaction is expected to dominate and lead to parton saturation. The proposed high luminosity, high energy Electron-Ion Collider (EIC) can probe a variety of nuclei species within a wide kinematic reach. On such a machine, we will be capable of unveiling the collective behavior of densely packed gluons in a strong color field, exploring the internal 3-dimensional landscape of a nucleus, as well as studying the fast-moving color charge in a nuclear medium. In this talk, we are going to discuss the compelling physics cases in the e+A program at an EIC and Monte Carlo studies of the measurements.

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