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Measuring the gluon distribution of nuclei: diffractive e+A collisions at eRHIC MATTHEW LAMONT, Brookhaven National Lab, ERHIC SCIENCE TASK FORCE COLLABORATION — Despite the vast array of exciting results coming from the RHIC and LHC heavy-ion programmes over the last decade, a quantitative understanding of many of the physics processes is still lacking. One of the prime reasons for this is the complete lack of understanding of the gluon distribution in nuclei. We know from HERA that the gluon dominates the structure of the nucleon at small parton momentum fractions x_{Bj}. Although it is not yet measured, we expect this to be the case for nuclei too. In fact, due to geometrical considerations, it is expected that gluons will be even more dominant in nuclei than in nucleons at the same value of x_{Bj}. In order to probe the gluon distribution, one needs to look at cold-nuclear matter via e+A collisions. Whilst p+A collisions can offer some expects of this, one cannot control the kinematical variables. A measurement of diffractive processes, where the nucleus stays intact after the collision, will help to provide insight into the gluon distribution and it was one of the important measurements identified in the Fall 2010 INT programme and the EIC White Paper. I will present results for simulations of diffraction at a high luminosity eRHIC facility, where an electron beam is added to the existing RHIC collider complex.

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