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Physics with polarized light ions at an EIC PAWEL NADEL-TURONSKI, Jefferson Lab — Physics with polarized light nuclei such as He-3, and at JLab also vector- and tensor polarized deuterium, form an important part of the EIC program. Polarization, and a capability of high-resolution detection of all the outgoing target fragments in coincidence with the scattered electron and any particles produced in the current jet, allows the EIC to tackle physics at the crossroads between deep-inelastic scattering (QCD factorization, partonic structure) and low-energy nuclear structure (nuclear wave functions from many-body theory, spectral functions). A program with light nuclei at an EIC would include: 1) Neutron's partonic structure, essential for quark-flavor decomposition of the nucleon spin and the extraction of flavor non-singlet sea quark distributions. 2) The bound nucleon in QCD - the modifications of the single nucleon's structure due to nuclear binding and the quark/gluon origin of the nuclear force. 3) Collective quark/gluon fields. Coherent scattering, in which the nucleus remains intact, probes the quark/gluon field of the entire nucleus. Similar information comes from diffractive scattering on deuterium, where the tensor polarized structure function of is zero in single-nucleon scattering and precisely identifies the QCD double-scattering contribution.

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