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Modeling of Polarized Electron-Proton Elastic Scattering in Collider Kinematics CAROLINE SOFIATTI — The Electron-Ion Collider (EIC) is a proposed new facility designed to collide high-energy polarized electrons with nuclei and polarized protons. The EIC is an essential step towards the next frontier in understanding the fundamental quark-gluon structure of matter. The electron-proton (e-p) program aims at precisely imaging the sea quarks and gluons in the nucleon. The goal of this project is to model the elastic e-p cross section and polarization asymmetry, at the conditions of relevance for the EIC. The concept of cross section is used to express the likelihood of interaction between particles; therefore, it provides important information about the nature of quarks and gluons. The development of the formalism for this reaction makes it necessary to reframe the electron scattering kinematics into the conditions of the EIC. Ultimately, documentation and computer codes regarding the modeling will be made available for future use by the EIC community.

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