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A New Simulation Framework for the Electron-Ion Collider[1]

JOHN ARRINGTON, Argonne National Laboratory — Last year, a collaboration between Physics Division and High-Energy Physics at Argonne was formed to enable significantly broader contributions to the development of the Electron-Ion Collider. This includes efforts in accelerator RD, theory, simulations, and detector RD. I will give a brief overview of the status of these efforts, with emphasis on the aspects aimed at enabling the community to more easily become involved in evaluation of physics, detectors, and details of spectrometer designs. We have put together a new, easy-to-use simulation framework using flexible software tools. The goal is to enable detailed simulations to evaluate detector performance and compare detector designs. In addition, a common framework capable of providing detailed simulations of different spectrometer designs will allow for fully consistent evaluations of the physics reach of different spectrometer designs or detector systems for a variety of physics channels. In addition, new theory efforts will provide self-consistent models of GPDs (including QCD evolution) and TMDs in nucleons and light nuclei, as well as providing more detailed physics input for the evaluation of some new observables.

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