Physics Division Seminar

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A New Physics Program with Jets and Heavy Flavor at the Electron-Ion Collider

The future Electron-Ion Collider (EIC), a premier nuclear physics facility in the US and the world, will answer fundamental questions about the structure of nucleons and nuclei, and the transport of energy and matter in the strongly-interacting nuclear environment. The production and propagation of heavy subatomic particles and jets are important parts of its decade-long research program. In this talk I will discuss recent theoretical advances in calculating cross sections and substructure for jets and open heavy flavor in electron-nucleus collisions at the EIC. I will show how exploiting the flexible center-of-mass energies and kinematic coverage, when combined with suitably chosen observables, can separate initial-state nuclear parton-distribution effects and final-state interactions. A silicon vertex detector/tracking is essential to precisely measure the forward going hadrons and jets at the EIC. I will discuss a conceptual design of a proposed Forward Silicon Tracker (FST) and related relevant jets and heavy flavor performance studies to enable this physics program.

To meet with the speaker (remotely), please contact the host Ian Cloët.