

The Electron Ion Collider User Group Meeting



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Evolution of sPHENIX into a Day-1 EIC Detector

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A new detector, sPHENIX, is being built at the Relativistic Heavy Ion Collider (RHIC) to study the detailed properties of the Quark Gluon Plasma. The sPHENIX detector consists of large acceptance electromagnetic and hadronic calorimetry and tracking detectors at mid rapidity built around the superconducting solenoid acquired from the decommissioned BaBar experiment at SLAC. The detector is being designed to have space available to instrument the forward direction, which is needed to fully realize the physics potential of polarized proton-proton and proton-nucleus collisions. GEM trackers, electromagnetic and hadronic calorimetry, and roman pot detectors are envisioned. Motivations include measurements of jet asymmetries in jet production (both inter- and intra-jet), Drell-Yan asymmetries, and studies of cold nuclear matter. The detector could further evolve into a day-1 EIC detector at RHIC. The magnet and detectors components could also form the basis of an EIC detector at Jefferson Lab. In this EIC detector concept, the sPHENIX detector is utilized as the foundation and additional calorimeters, tracking and particle identification systems are added to deliver a comprehensive physics program. In this talk, we will review the envisioned evolution from sPHENIX to and EIC detector and discuss recent updates on this detector concept and its physics capabilities.

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Session Classification: Novel Technical Advancements (Detector / Experiment)