

ePIC Tracking System Overview and Performance

Tuesday, 31 October 2023 17:00 (30 minutes)

On behalf of the ePIC Collaboration

The future Electron-Ion Collider (EIC) at Brookhaven National Laboratory will collide polarized electrons with polarized proton/ions. The electron Proton and Ion Collider (ePIC) detector is being designed as the day one EIC detector. The EIC physics program requires precision tracking and particle identification (PID) capabilities that extend over a large kinematic acceptance. To meet these challenges ePIC is being designed as a highly integrated detector. One critical component of the detector is the tracking system, consisting of silicon layers near the interaction region, and then transitioning into large area micropattern gas detectors (MPGDs) further from the interaction region. In the current ePIC design, the MPGDs play a critical role in providing fast timing hit points for pattern recognition and signal to background discrimination, which are needed for track reconstruction. Additionally, MPGDs located near PID subsystems could provide a precision space point measurement to better determine the angle that the particle enters the PID subsystem, ultimately leading to better Cherenkov ring reconstruction and PID performance.

An overview of the current ePIC tracking system and its projected performance will be presented.

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