MPGD Trackers in ePIC Detector at the EIC

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The future Electron-Ion Collider (EIC) at Brookhaven National Laboratory will collide polarized electrons with polarized proton/ions. The electron – Proton / Ion Collider (ePIC) Experiment is the EIC general-purpose detector aiming at delivering the full physics program of the EIC. This unique environment imposes stringent requirements on tracking system needed for the measurement of the scattered electron and charged particles produced in the collisions at the EIC. The ePIC central tracker is based at its core of silicon-based tracking and vertexing detectors, complemented by large Micro-Pattern Gaseous Detector (MPGD) trackers in the barrel region as well as in both the electron and hadron end cap regions. The ePIC MPGD trackers provide fast timing and additional hit points for pattern recognition during track finding. Two MPGD technologies have been selected for the ePIC gaseous trackers: cylindrical Micromegas technology for the barrel inner tracker and planar thin-gap GEM-µRWELL hybrid technology for both the barrel outer tracker and the end cap disks. In this talk we will present the latest performance from the recent test beam campaigns to address the challenges from the stringent the requirement from physics and simulation studies. We will present the ongoing R&D efforts with the ePIC MPGD community to address these requirements and finally, we will discuss the plans and timeline for the production and testing and full commissioning of the MPGD trackers before the installation in the ePIC detector.