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Initial Tests of Commercially Manufactured Large GEM Foils and EIC Triple-GEM Detector Design AMANI KRAISHAN, Temple Univ — Tracking detectors exist in many different varieties and operate on different physical principles, depending on the type of particle that has to be tracked, on the desired spatial resolution, and on the area that has to be covered. Gas electron multiplier (GEM) detectors, operating on the principle of electron amplification in gases, provide good spatial resolution for charged particles and can be built with large sensitive areas. Currently CERN is the only main distributor of large area GEM foils, and will be hard pressed to keep up with the increasing demand. To help satisfy the GEM foil demand, the commercialization of large area GEM foils via the single mask process has been established by Tech-Etch of Plymouth, MA, USA. Here we present our initial quality assurance tests of the foil's electrical and geometrical properties for sizes up to 40 X 40 cm^2. Using our electrical and optical measurement setup, we also measured 10 X 10 cm^2 GEMs produced by CERN and compare it with the Tech-Etch foils. Furthermore, we will present initial R&D design work done toward building a potential triple-GEM tracking detector to be used at a future experiment at an Electron-Ion Collider (EIC) facility.

Amani Kraishan
Temple Univ

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