

Abstract Submitted  
for the DNP20 Meeting of  
The American Physical Society

**All-silicon tracker resolution studies for the Electron Ion Collider (EIC)** REYNIER CRUZ TORRES, Lawrence Berkeley National Laboratory — The Electron Ion Collider (EIC) has prompted the physics community to determine which detector technologies and designs are preferred for this facility’s physics program. This program will require a hermetic, compact, low-material-budget tracker with excellent momentum, angular, and vertex resolutions, as well as aid in particle identification (PID). One of the candidate technologies that can satisfy these requirements are semiconductor detectors. We have studied an all-silicon tracker prototype using the Fun4All full-simulation package, which has been adopted by the EIC User Group. This tracker covers an acceptance of  $|\eta| < 4$  and  $0 \leq \phi \leq 2\pi$ , and satisfies the projected material-budged requirements of the EIC. Momentum and angular resolutions were studied for pions, muons, electrons, and jets. Jets were generated from electron-proton collisions using the PYTHIA 8 event generator. The remaining particles from the study were generated using a single-particle gun. The resolutions were studied up to momenta of 25 GeV/ $c$  with different magnetic-field configurations, both at the collision vertex and also at PID-detector locations. We find momentum resolutions better than 3% and polar-angle resolutions of less than 1 mrad at  $|\eta| < 3$ , which satisfy the EIC requirements.

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Date submitted: 26 Jun 2020

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