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The TOPSiDE Detector Concept for the EIC

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After an introduction to the EIC (parameters, physics goals, and status) and a quick overview of the various detector concepts being developed for the EIC, I will introduce the TOPSiDE detector concept. TOPSiDE aims a the detection and identification of all particles created in electron-proton/ion collisions at the EIC while achieving the best possible momentum/energy resolution. The measurement of hadronic jets exploits the advantages offered by Particle Flow Algorithms (PFAs), which in turn require imaging calorimetry. Particle identification is achieved through time-of-flight measurements in the tracker and the electromagnetic calorimeter, necessitating the deployment of ultra-fast silicon sensors. Simulation studies showed that timing resolutions of 10 picoseconds are required to achieve pion-kaon separation up to 7 GeV/c.

I will review the ongoing detector R&D efforts to realize TOPSiDE and also some of the benchmark physics processes being studied to validate the concept.

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