Contribution ID: **215** Type: **not specified**

TOPSiDE: A detector concept for the EIC

Tuesday 17 April 2018 12:24 (18 minutes)

We report on a detector concept, TOPSiDE, being developed for the EIC Electron-Ion Collider. 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 application of ultra-fast silicon sensors. In the forward (hadron) direction the particles are identified with a Cerenkov detector covering forward angles up to 10 degrees and a dipole or toroidal magnet for momentum measurement. The talk presents the detector concept, the status of its simulation software, first studies performed with a completed simulation tool chain, and the status of the detector R&D related to the novel and challenging aspects of the concept detector.

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Session Classification: WG7: Future of DIS

Track Classification: WG7: Future of DIS