

CORE - a Compact Detector for the Electron-Ion Collider

The COmpact detectoR for the Eic (CORE) concept has been envisioned in response to the “Call for Collaboration Proposals for Detectors to be located at the Electron-Ion Collider (EIC)”. The CORE detector is designed to satisfy the “mission need” statement with a physics scope that completely and comprehensively covers the one outlined in the EIC Community White Paper and the National Academies of Science (NAS) 2018 report. The distinguishing theme of the CORE detector is that it exploits fully technological advances in detector precision and granularity to minimize the overall size of the detector. CORE is a hermetic, high-luminosity, general-purpose detector designed to support the full EIC physics program, and as such could be used as a basis for either Detector 1 or 2 in IP6 or IP8. It is constructed around a short 3 T central solenoid. The tracking technology is essentially all silicon, and the electromagnetic calorimetry is based on the highest performance crystals available. Hadronic particle identification (PID) is achieved with a combination of compact gaseous and solid radiator ring-imaging Cherenkov detectors. The central detector is complemented by an extended suite of forward detectors downstream on the hadronic side of the intersection region. In this contribution, an overview of the detector is given complemented with simulated physics performances for a selection of physics channels.

Submitted on behalf of a Collaboration?

Yes

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