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## ATHENA at EIC

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The ATHENA (A Totally Hermetic Electron-Nucleus Apparatus) detector is designed to deliver the full physics program of the Electron-Ion Collider (EIC) as set out for the EIC project approval (December 2019), providing the best possible acceptance, resolution, and particle identification capabilities. As an entirely new detector, ATHENA has been designed to accommodate all necessary subsystems without compromising on performance, while leaving room for future upgrades. Central to the proposal is a new, large-bore magnet with a maximum field strength of 3T. Particle tracking and vertex reconstruction are performed by a combination of next-generation silicon pixel sensors and state-of-the-art micro-pattern gas detectors. The combination of magnetic field strength and high resolution, low mass tracking technologies optimizes momentum resolution and vertex reconstruction. The large bore of the magnet allows for layered, complementary, state-of-the-art particle identification technologies. A novel hybrid imaging/sampling electromagnetic calorimeter is proposed for the barrel region of the detector, along with a high resolution crystal calorimeter in the electron-going direction. The hadron endcap has calorimetry, tracking and particle identification detectors that are optimized for high-momentum hadron identification and high-energy jet reconstruction. We have striven for hermeticity by closely integrating the far-forward and far-backward detectors with the central detector to achieve maximal kinematic coverage and to optimize the detection of particles at small scattering angles. Careful balance between choice of cutting-edge and mature detector technologies achieves the necessary detector performance while minimising risk and providing a cost-effective solution. Scalable modern technology choices assure optimum performance for multi-year operation from day one.

The ATHENA detector and its potentialities are reviewed in the frame set by the outcome of the EIC Call for Proposal Process, not yet known at the time this abstract is submitted, but which will be announced at the beginning of March 2022.

### Collaboration

ATHENA

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