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Overview Of The Interaction Region of the Future Electron-Ion Collider (EIC) at BNL

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We present an overview of the Interaction Region (IR) design for the Electron Ion Collider (EIC), which will be located at Brookhaven National Laboratory (BNL). The IR is designed to meet the requirements of the nuclear physics community as outlined in [1].

The IR design features a ± 4.5 m free space for the detector; a forward spectrometer magnet is used for the detection of hadrons scattered under small angles. The hadrons are separated from the neutrons allowing to detect neutrons up to ± 4 mrad. On the rear side the electrons are separated from photons using a weak dipole magnet for the luminosity detector and to detect scattered electrons (e-tagger).

In this paper we will show the present status of the design and discuss some of the design challenges.

[1] An Assessment of U.S.-Based Electron-Ion Collider Science. (2018). Washington, D.C.: National Academies Press. <https://doi.org/10.17226/25171>

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