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Lattice design of the EIC electron storage ring for energies down to 5 GeV

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The Electron-Ion Collider (EIC) at Brookhaven National Laboratory will feature an electron storage ring that will circulate polarized beams with energies up to 18 GeV. Recently a study has been undertaken to extend the minimum energy from 6 GeV to 5 GeV. As the solenoid-based spin rotators around the interaction point require specific bending angles that depend on the energy range, this change results in major changes to the geometry. Moreover, avoiding interference of the electron beamline with the other beamlines in the tunnel, as well as with the tunnel walls, is a formidable challenge, especially at the location of the large-diameter superconducting solenoids. In this contribution, the details of the modified spin rotators, geometrical layout, and optics of the revised lattice are presented.

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Footnotes

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