Contribution ID: **21** Type: **Invited Oral Presentation**

Beam-beam simulation studies for the Electron-Ion Collider

Yun Luo, F. Willeke, Yue Hao, J. Qiang, D. Xu, M. Blaskiewicz, C. Montag

The Electron-Ion Collider (EIC), to be constructed at Brookhaven National Laboratory, will collide polarized high-energy electron beams with polarized hadron beams, achieving luminosities up to 1 × 10^{34} cm^{−2} s^{−1} in the center-of-mass energy range of 29-140 GeV. To achieve such high luminosity, we adopt high bunch intensities for both beams, small and flat transverse beam sizes at the interaction point (IP), and a large full crossing angle of 25 mrad with crab cavities. In this talk, we will present the challenges to the EIC beam-beam design parameters and compare them with previous e-p collider HERA and other colliders, such as the KEK-B factory and the Relativistic Heavy Ion Collider (RHIC). We will present the beam-beam interaction related design parameter optimization, optics and magnet imperfections, and noises from power supply ripples, crab cavity noises, and intra-beam scattering (IBS).

Footnotes

beam-beam talk on EIC

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

Primary author: Mr LUO, Yun (Brookhaven National Laboratory (BNL))

Presenter: Mr LUO, Yun (Brookhaven National Laboratory (BNL))

Session Classification: Beam-beam & Instabilities

Track Classification: WG4 : Beam-beam & Instabilities