Contribution ID: **1686** Contribution code: **MOPA046** Type: **Poster Presentation**

Revisit the effects of 10 Hz orbit oscillation in the relativistic heavy ion collider

Monday, 8 May 2023 16:30 (2 hours)

10Hz horizontal orbit oscillation due to helium flow was observed in the routine operation of the Relativistic Heavy Ion Collider (RHIC). Without compensation by 10Hz orbit feedback, this will cause sizeable luminosity variation and reduce the beam lifetime during physics stores. In this article, we revisit the effects of this beam oscillation with weak-strong beam-beam simulation and dynamic aperture calculation. The goal is to determine the tolerable 10 Hz orbit oscillation amplitude at the interaction region and we will use this tolerance determine the power supply ripple requirements in the Electron-Ion Collider (EIC).

Funding Agency

Work supported under Contract No. DE-SC0012704, Contract No. DE-AC05-06OR23177, Contract No. DE-AC05-00OR22725, and Contract No. DE-AC02-76SF00515 with the U.S. Department of Energy.

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: LUO, Yun (Brookhaven National Laboratory)

Co-authors: BLASKIEWICZ, Michael (Brookhaven National Laboratory); FISCHER, Wolfram (Brookhaven National Laboratory); MARX, Daniel (Brookhaven National Laboratory); MONTAG, Christoph (Brookhaven National Laboratory); PODOBEDOV, Boris (Brookhaven National Laboratory); XU, Derong (Brookhaven National Laboratory)

Presenter: LUO, Yun (Brookhaven National Laboratory)

Session Classification: Monday Poster Session

Track Classification: MC1: Colliders and other Particle Physics Accelerators: MC1.A19: Electron-Hadron Colliders