Contribution ID: **1519** Contribution code: **THPM036** Type: **Poster Presentation**

Design of the standard BPM pick-up for the EIC electron storage ring

Thursday 5 June 2025 15:30 (2 hours)

Designing the standard BPM pick-up for the Electron Storage Ring (ESR) of the Electron-Ion Collider (EIC) is a challenging task as the BPM button may experience the elevated beam-induced resistive wall heating due to shorter rms bunch length (˜ 7 mm) and high repetition rate. In addition, the BPM pick-up needs to provide reliable beam position measurements over a wide range of beam energies: 5 GeV –18 GeV. Furthermore, the geometric impedance and the higher order modes associated with the button and its configuration should be analyzed. This paper focuses on the design of the EIC ESR BPM pick-up and presents the corresponding beam-induced heating and thermal analysis. Our analysis shows that active water cooling is required for the ESR BPM.

Footnotes

Paper preparation format

LaTeX

Region represented

America

Funding Agency

Work supported by Brookhaven Science Associates, LLC under Contract No. DE-SC0012704 with the U.S. Department of Energy.

Author: SANGROULA, Medani (Brookhaven National Laboratory)

Co-authors: BLEDNYKH, Alexei (Brookhaven National Laboratory (BNL)); HETZEL, Charles (Brookhaven National Laboratory (BNL)); LIU, Chuyu (Brookhaven National Laboratory); GASSNER, David (Brookhaven National Laboratory (BNL)); LOVELACE III, Henry (Brookhaven National Laboratory); BELLON, Jonathan (Brookhaven National Laboratory (BNL))

Presenter: LOVELACE III, Henry (Brookhaven National Laboratory)

Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation and Controls,Feedback and Operational Aspects: MC6.T03 Beam Diagnostics and Instrumentation