FELICIA – A probe to survey the RHIC magnet beampipe diameter for EIC beam screen insertion

Thursday, 11 May 2023 16:30 (2 hours)

The Electron Ion Collider (EIC) Hadron Storage Ring (HSR) will reuse most of the existing superconducting magnets from the RHIC storage rings. To comply with the more demanding operational scenarios imposed by the EIC hadron beams, the beam pipes of the reused RHIC magnets will be equipped with low surface impedance and low SEY screens. The installation of these screens will be done with the superconducting magnets as installed, making it a critical operation for a timely EIC installation.

On one hand the beam screen installation radial clearance must be as small as possible to maximize the superconducting magnet aperture. But on the other hand, keeping enough clearance is critical to ensure a smooth beam screen installation.

In preparation for this work, an autonomous survey probe was designed and built to measure in-situ the magnet beam pipe inner diameter and provide critical data for the beam screen design and magnet aperture optimization.

This paper reports on the design of the high-precision probe and the findings from its survey campaign.

Funding Agency

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

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: MICOLON, Frederic (Brookhaven National Laboratory (BNL))

Co-authors: BELLON, Jonathan (Brookhaven National Laboratory (BNL)); HETZEL, Charles (Brookhaven National Laboratory (BNL)); HOLMES, Douglas (Brookhaven National Laboratory); PTITSYN, Vadim (Brookhaven National Laboratory (BNL)); TUOZZOLO, Joseph (Brookhaven National Laboratory); VERDU-ANDRES, Silvia (Brookhaven National Laboratory (BNL))

Presenter: PTITSYN, Vadim (Brookhaven National Laboratory (BNL))

Session Classification: Thursday Poster Session
Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T31: Subsystems, Technology and Components, Other