Contribution ID: **121** Type: **(a) Talk abstract only**

Progress of the EIC superconducting RF system

Wednesday 21 May 2025 11:45 (15 minutes)

The Electron-Ion Collider (EIC) under construction at Brookhaven National Laboratory is being developed in partnership with the U.S. Department of Energy's Thomas Jefferson National Accelerator Facility. The EIC will deliver high-luminosity, variable center-of-mass energy collisions of highly polarized electron beams with highly polarized proton beams and ion beams. Superconducting radio-frequency (SRF) cavities will be used to provide fast acceleration of the electron beam in the rapid cycling synchrotron (RCS), store the Ampere-class beams in the electron storage ring (ESR) and the hadron storage ring (HSR), and crab the colliding bunches to restore head-on collisions. All these SRF cavities will operate at 2 K. This presentation will describe the challenges and proposed solutions for the EIC SRF systems, review the progress, and overview our plans for the first article 591 MHz ESR cryomodule.

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Session Classification: Superconducting Radio Frequency

Track Classification: FCC accelerators: SRF Programme