

# eeFACT 2025 - 70th ICFA Advanced Beam Dynamics Workshop on High Luminosity Circular e<sup>+</sup>e<sup>-</sup> Colliders



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Type: **Invited Oral Presentation**

## EIC vacuum system

*Tuesday 4 March 2025 15:20 (30 minutes)*

The Electron-Ion Collider (EIC) will be a new, state of the art nuclear physics research facility that is currently approaching the preliminary design milestone. This facility will be built at the US Department of Energy's Brookhaven National Laboratory located in Upton, New York. The EIC will collide high energy (up to 18 GeV) polarized electrons with polarized protons (up to 275 GeV) and heavy nuclei with a peak design luminosity of  $10^{34}$  /cm/s. To achieve this level of performance, significant design challenges will need to be overcome. The electron accelerator vacuum system must be designed to absorb 10MW of synchrotron radiation and beam induced heating. With the planned bunch spacing of 10ns, electron cloud formation in the superconducting hardon storage ring will have a significant impact on beam stability without proper mitigation. Both storage rings will rely on thin films and surface treatments to reduce photon stimulated desorption as well as longitudinal impedance. This talk will give a overview of the various design solutions which are planned for the facility as well as the current status of ongoing development efforts.

### Footnotes

### Funding Agency

### I have read and accept the Privacy Policy Statement

Yes

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