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## Beam induced heating analysis update for the EIC vacuum chamber components

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One of the challenges in designing the Electron-Ion Collider (EIC) is mitigating beam-induced heating caused by the intense electron and hadron beams. Heating of the ESR vacuum chamber components is primarily due to beam-induced resistive wall (RW) losses and synchrotron radiation. For the HSR, heating results mainly from large radial offsets and heat conduction from room temperature to cryogenic temperatures for cryo-components. In this paper, we provide an update on the beam-induced heating and thermal analysis of critical ESR vacuum chamber components, such as the ESR Large Angle Bremsstrahlung Monitor (LABM). We also offer a similar update for crucial HSR vacuum components, including the cryo-cooled BPM button assembly, abort kicker, and polarimeter. To perform the thermal analyses, we calculate the resistive wall loss on individual components using CST, and we evaluate the synchrotron radiation (if it exists) using SynRad. These losses, along with realistic boundary conditions, are then fed into ANSYS to determine the temperature distribution.

### Footnotes

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