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## **C1Or2C-02: Thermal engineering of the Cryogenic Beam Position Monitors for the EIC Hadron Storage Ring**

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The Electron Ion Collider (EIC) Hadron Storage Ring (HSR) will reuse most of the existing superconducting magnets from the RHIC storage ring. However, the existing stripline beam position monitors (BPM) used for RHIC will not be compatible with the planned EIC hadron beam parameters that include higher intensity, shorter bunches, and some operational scenarios with large radial offsets of the beam in the vacuum chamber. To address these challenges, the existing RHIC stripline BPMs will be shielded, and a new BPM design using button pick-ups was integrated into a new vacuum interconnect/bellows assembly that will be installed adjacent to the existing BPMs.

A dedicated analysis of the new BPM housing and button pick-up design has been conducted to assess the thermal effects caused by beam induced resistive wall heating. Also, this analysis was extended to determine the heating from the BPM signal propagation through the cryogenic cables, for several operational scenarios. This paper reports on the analysis results to quantify the heat transfer and temperature distribution that can be expected on the new HSR cryogenic BPM housing, button pick-ups, and cables.

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