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Impedance measurement setup design of a silicon carbide beamline higher-order-mode absorber

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Cylindrical shell silicon carbide (SiC) higher-order-mode (HOM) beamline absorbers (BLA) were developed and high-power tested for the 591 MHz single-cell superconducting radio frequency (SRF) cavities in the Electron Storage Ring of the Electron-Ion Collider. The material properties of the BLA are crucial for HOM damping and wakefield performance. However, discrepancies were observed between the material parameters measured from small SiC samples and those of the full SiC cylinder used in the BLA, which has a radius of 137 mm. To address this, a coaxial-type test setup was designed to measure the transmission characteristics and extract the material parameters of SiC. These parameters can be used for accurate HOM analysis in the 591 MHz SRF cavity string design.

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Yes

Footnotes

Funding Agency

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