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RF measurements and performance tests at 4K of cryomodule 1 cavities for HELIAC

Thursday 25 September 2025 14:30 (3 hours)

A new superconducting (sc) continuous-wave (cw) linear accelerator (linac) is currently being built at GSI to meet the future requirements in research on superheavy elements (SHE) synthesis and material science with a particular focus on fusion studies. The HElmholtz LInear Accelerator (HELIAC) will provide ion beams in the energy range from 3.5 MeV/u to 7.3 MeV/u with a mass-to-charge ratio (A/z) of up to 6. For acceleration, superconducting multi-cell crossbar-H-mode (CH) cavities operating at a resonance frequency of 217 MHz are used. Additionally, superconducting single-spoke (SSR) buncher cavities are employed for longitudinal beam matching within the CH sections. In 2023/2024, the first cryomodule, CM1, consisting of three CH cavities, one SSR, and two sc solenoids, was commissioned with beam at the GSI test stand. This paper presents RF measurements and performance tests of the cavities conducted during commissioning of CM1.

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Yes

Footnotes

Funding Agency

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