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Certification testing of prototype superconducting quarter-wave and half-wave resonators for HIAF

Tuesday, 10 September 2024 16:00 (1h 30m)

The 81.25MHz quarter-wave resonator (QWR) and 162.5MHz half-wave resonator (HWR) are selected as the main accelerating cavities for the superconducting ion Linac (iLinac) of the High Intensity heavy-ion Accelerator Facility (HIAF) at Institute of Modern Physics (IMP). Six QWR007 (βopt=0.07) cavities and eight HWR015 (βopt=0.15) cavities have been fabricated before the mass production to verify the design and production quality control. Two cavities of the both types have been random chosen to surface processing and vertical testing for performance validating before welding helium vessel. In this paper, the development of SRF cavity for HIAF will be addressed, which including the fabrication, surface processing and vertical testing results. The achieved gradients for both cavities have exceeded 60%~100% of requiring operation gradients. The Q0 of both types'cavities have meet the 2 K operation requirement too. These results inspired to push the cavity production for the HIAF project forward to the mass production stage.

Footnotes

Funding Agency

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