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Calibration of button-type beam position monitor based on low beta beam at RAON

Tuesday 27 August 2024 16:00 (2 hours)

RAON is a multi-purpose accelerator facility that can accelerate various heavy ion beams and rare isotope beams. The maximum energy of the uranium beam is 200 MeV/u. Sixty button beam position monitors were fabricated for use in SCL3, which accelerates the beam from 0.5 MeV/u to 18.5 MeV/u in a uranium case. BPM Electronics has developed position measurement using the IQ method for the 1st, 2nd, and 3rd harmonic frequencies of 81.25 MHz. Calibration factors for each frequency of the BPM were obtained on a wire test bench for the three frequency harmonic components. The position calibration factor obtained from the CST simulation had a beta dependence and differed from the measurements from the wire test bench. To measure the calibration factor using a beam, a moving stage equipped with a micrometer was prepared on the one-dimensional plane of the MEBT cross-section. We present the results of a beam-based calibration test of a button-type BPM for a low-beta heavy ion beam.

Footnotes

Funding Agency

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