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Progress on the TRIUMF high resolution mass separator beam commissioning

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A new ISOL rare isotope beam production facility, ARIEL, is being commissioned to triple the availability of radioactive ion beams for the ISAC experimental facilities at TRIUMF. Part of ARIEL is the new CANREB charge breeding facility that includes RFQ cooler, EBIS and Nier separator, and a high-resolution mass separator system (HRS). The HRS is designed to achieve a resolving power of 20,000 for a transmitted emittance of 3 μm with an energy spread of less than 0.5 eV for a beam energy up to 60 keV. The beam commissioning with stable ion beams was staged, using optical tunes developed for different mass resolving power: 5000, 10,000 and 20,000. Presently we are in the final development stage where we seek to reach the highest resolving power as per design, which requires correcting the high-order aberrations using our innovative and unique electrostatic multipole featuring an unconventional rectangular design. In this paper we are going to discuss issues encountered during the commissioning runs, and present recent results.

Funding Agency

Footnotes

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Yes

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