IPAC'23 - 14th International Particle Accelerator Conference



Contribution ID: 1129 Contribution code: TUPA181

Type: Poster Presentation

Linear accelerator for a next generation rare isotope facility

Tuesday, 9 May 2023 16:30 (2 hours)

We propose a linear accelerator concept for a Next Generation Nuclear Physics Accelerator Facility - a versatile User Facility with a wide variety and high availability of its instruments and beam time.

The concept is based on the simultaneous acceleration of light and heavy ion primary beams. It improves the utilization of the superconducting driver-accelerator capabilities and allows for the simultaneous and complementary rare isotope production in two different targets, namely a thin target for fragmentation of accelerated heavy ion beams, and a thick spallation target for an isotope separation on-line (ISOL) system driven by light ion beams. This approach supports the multi-user operation of the facility, and enables other research driven by light ion beams.

The concept is presented as an upgrade of the Facility for Rare Isotope Beams (FRIB, MSU) with a 60-MV compact room-temperature continuous-wave light ion injector. The funneling of the light and heavy ion beams as well as their distribution to production targets is discussed.

Funding Agency

This work is supported by the U.S. Department of Energy Office of Science under Cooperative Agreement No. DE-SC0000661, the State of Michigan, and Michigan State University.

Footnotes

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Yes

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Session Classification: Tuesday Poster Session

Track Classification: MC4: Hadron Accelerators: MC4.A08: Linear Accelerators