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Operation status of FRIB wedge systems and plan for power ramp up

Thursday, 23 May 2024 16:00 (2 hours)

At the Facility for Rare Isotope Beams (FRIB) Advanced Rare Isotope Separator (ARIS), wedges are critical devices to achieve rare isotope beam production. Different ions experience a different amount of slowing down by the wedges, which leads to a spatial separation of ion species and enables separation/purification of the secondary isotope beam.
As of December 2023, wedge systems have successfully supported FRIB commissioning for over 4,000 hours. Nearly 60 unique wedges were utilized which were implemented during 15 wedge maintenance periods. Material selection, unique wedge designs for beam tuning, secondary wedge design, and diagnostic wedge design developments will be discussed in this paper.
The current wedge devices will support primary beam operations to a power level of 65 kW, as evaluated by analysis. Development is underway to achieve a higher power wedge system, capable of 400 kW with full remote handling capacity. Further development plans include a variable wedge system to reduce maintenance time and increase ARIS tuning flexibility.

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