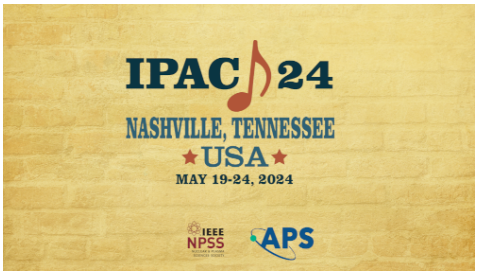

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Thermal-fluid analysis and operation of a low power water-cooled tilted beam dump at Facility for Rare Isotope Beams

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

The Facility for Rare Isotope Beams is a high power heavy ion accelerator completed in April 2022. The FRIB accelerator was commissioned with acceleration of heavy ions to energies above 200 MeV/nucleon (MeV/u) that collide onto a rotating single-disk graphite target. The remaining beam is absorbed by a water-cooled static beam dump that is oriented at a 6 degrees angle with respect to the beam. The beam dump consists of the beam stopper made of machined Aluminum 2219 block, and 3D-printed inlet and outlet parts made of Aluminum 6061 that delivers the cooling water from utilities to the beam stopper and its return. This low power beam dump is designed for up to 10 kW beam power. This paper presents a discussion on the thermal-fluid behavior of the beam dump for various beam species and beam power.

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