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Status and Plan of Materials and the Radiation Damage Analysis in FRIB

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The Facility for Rare Isotope Beams (FRIB) is a scientific user facility for nuclear science. FRIB's superconducting radio frequency (SRF) linear heavy-ion accelerator can accelerate all the ions up to uranium to energies above 200 MeV/u. The design beam power is 400 kW, which, once achieved, will extend the heavy-ion accelerator power frontier by more than one order of magnitude. FRIB currently operates at a primary beam power of 10 kW.
This presentation will focus on the status and plan of materials and the radiation damage analysis in FRIB for the challenges and discuss the technical several issues. Analysis based on material irradiation effects caused by heavy particle beams and the influence of the environment in which they are used is necessary. In particular, the function of the beam dump is planned to include isotope production in water, so the fabricability including high reliable designing, soundness, and durability of the thin vessel structure of the beam dump are one of very important subject to be evaluated. The radiation damages for the related facilities will be also included and discussed.

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