Workshop on Radiation Effects in Superconducting Magnet Materials 2015 (RESMM'15)

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The FRIB Fragment Separator Status

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Content :

The Facility for Rare Isotope Beams under construction at Michigan State University, a new national user facility funded by the U. S. Department of Energy Office of Science, will provide beams of any element at energies of 200 MeV/u at a power of 400 kW. Rare isotopes are generated by fragmentation or in-flight fission by interactions of the beam with a production target. The reaction in the target produces several kilowatts of fragments as well as neutrons. The unreacted beam in the beam dump also produces a sea of neutrons and other secondary reaction products that are not absorbed by the dump. Initial plans to use HTS coils for magnets with the highest energy deposition rate to reduce the cryogenic load were abandoned due to costs and problems with quench protection in magnets with high stored energy. The startup configuration will utilize NbTi coils and cyanate ester epoxy. Design changes were made to reduce the radiation environment and enhance coil lifetimes. Lifetimes are estimated to be sufficient so that upon further maturation of HTS technology, replacement coils made from HTS can be used.

The design and establishment of the FRIB as a DOE Office of Science National User Facility is supported by the Nuclear Physics Program in the DOE Office Science under Co-operative Agreement DE-SC0000661.

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