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A Multi-Reflection Time-of-Flight Mass Spectrometer for Isobaric Purification at the University of Notre Dame

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One of the most significant problems in the production of rare isotopes is the simultaneous production of contaminants, often times isobaric. Thus, a high-resolution beam purification method is required which is compatible with both the low yield and short half-life of the desired radionuclide. A multi-reflection time-of-flight mass spectrometer (MR-TOF-MS) meets all these criteria, in addition to boasting a smaller footprint relative to traditional separator dipole magnets. Such a device is currently under construction at the University of Notre Dame and will be coupled to the IG-ISOL source in the upcoming cyclotron facility. The motivation, conceptual design and a status report will be presented.

Primary author: Dr SCHULTZ, Brad (University of Notre Dame)

Co-authors: Ms NICOLOFF, Catherine (University of Notre Dame); Mr KELLY, James (University of Notre Dame); Dr BRODEUR, Maxime (University of Notre Dame)

Presenter: Dr SCHULTZ, Brad (University of Notre Dame)

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