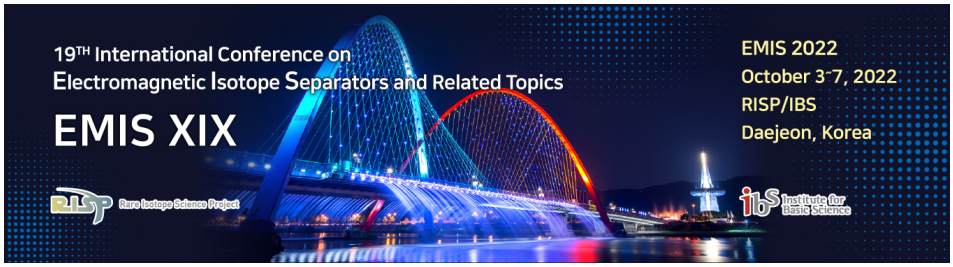

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Recent Upgrades and Mass Measurements with the TITAN MR-TOF Mass Spectrometer and Applications to Beam Composition

Tuesday, 4 October 2022 22:24 (8 minutes)

TRIUMF's Ion Trap for Atomic and Nuclear science (TITAN) performs mass spectrometry and in-trap spectrometry on rare isotopes generated at the Isotope Separator and Accelerator (ISAC) facility of TRIUMF. Recently, the TITAN Multi-Reflection Time Of Flight (MR-TOF) mass spectrometer has made high-precision mass measurements of isotopes of interest for constraining astrophysical r-process and nuclear structure theory. It has also been applied to studying beam composition to characterize new targets and support implantation experiment.

The excellent mass accuracy, sensitivity and dynamic range of the TITAN MR-TOF makes it a powerful tool for performing these high-precision measurements. Since the MR-TOF's commissioning in 2017, it has undergone continuous upgrades, improving mass accuracy and precision, resolving power, efficiency, and species identification. A description of operation of the MR-TOF and improvements enabling TITAN's scientific program along with a selection of recent measurements will be presented, and their consequences discussed.

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