



NUSTAR Seminar

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Zoom Link

<https://gsi-fair.zoom.us/j/95456676089>

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Mass measurements of exotic nuclei with TITAN's MR-TOF-MS

TRIUMF's Ion Trap for Atomic and Nuclear science (TITAN) is located at TRIUMF, Canada's particle accelerator centre, in Vancouver. TITAN consists of a unique set of interconnected traps for in-trap decay spectroscopy and high-precision mass measurements of nuclei produced by TRIUMF's Isotope Separator and Accelerator (ISAC) facility.

Complementing a Penning trap mass spectrometer, a Multiple-Reflection Time-Of-Flight Mass-Spectrometer (MR-TOF-MS) has been recently added to TITAN. With its capacity for fast, non-scanning, sensitive and high-resolution mass spectrometry, the MR-TOF-MS has helped to extend TITAN's measurement program to even more exotic nuclei.

Furthermore, using the technique of dynamically re-trapping ions into a RF trap after time-of-flight separation, it can suppress the strong isobaric background present in beams produced by the ISOL method and detect low-yield species which would be otherwise inaccessible. This re-trapping technique also allows the MR-TOF-MS to act as a beam purifier and to provide isotopically clean beams for other traps at TITAN.

Here, recent results from MR-TOF mass measurements for nuclear structure and nuclear astrophysics will be presented. In addition, future and recent upgrades, which have improved parameters like the mass resolution, the dynamic range, and the temporal stability of the system, will be discussed.