Beitrag ID: **17** Typ: **Talk Main Workshop**

Mass Measurements For Explosive Nuclear Astrophysics And Exploration Beyond The Sn-132 And Pb-208 Diagonal

Donnerstag, 21. August 2025 10:00 (20 Minuten)

High precision mass measurement using ion traps continue to play an important role in shaping our understanding of the nucleus. State-of-the-art spectrometers nowadays can reach far into the neutron-rich terra incognita, away from the valley of stability, where new structure phenomena including e.g. weakening or disappearance of classical nuclear shells or rapid shape transitions can be observed and studied via their signatures in the mass surface. At the same time, rapid changes in the mass surface directedly impact the rapid neutron-capture process pathway and thus our understanding of the origin of heavy elements.
In this talk we will discuss technical aspects of high precision mass measurements using ion traps tailored for ISOL and In-Flight facilities, particularly drawing from TRIUMF's Ion Trap for Atomic and Nuclear science (TITAN) [1] located at the ISAC (TRIUMF, Vancouver) ISOL type facility and the FRS Ion Catcher experiment [2] located at the GSI/FAIR (Darmstadt, Germany) In-Flight facility. Among others, we will highlight recent results of mass measurements of neutron-rich isotopes e.g. investigating the evolution of neutron-rich tin and gallium isotopes and their impact on r-process network calculations but also discuss the emergence of features in the mass surface beyond N = 116 in ytterbium. Finally, we will give an outlook towards future mass measurement campaigns pushing the limits of known masses beyond the Sn-132 and Pb-208 diagonal and discuss links between mass measurements reveling nuclear structure and astrophysical implications.

Autor: REITER, Moritz Pascal (University of Edinburgh)

Co-Autoren: FRS ION CATCHER COLLABORATION (GSI/FAIR); TITAN COLLABORATION (TRIUMF)

Vortragende(r): REITER, Moritz Pascal (University of Edinburgh)