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Mass Measurements of Actinides at TRIGA-Trap

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TRIGA-Trap is a high-precision, double Penning trap mass spectrometer located in the reactor hall of the TRIGA (Training, Research, Isotopes, General Atomic) research reactor in Mainz, Germany. Masses of actinides including ^{244}Pu, ^{241}Am, ^{243}Am, ^{248}Cm, and ^{249}Cf have been measured using the Phase-Imaging Ion-Cyclotron-Resonance (PI-ICR) technique, achieving uncertainties in the parts-per-billion (ppb) level. These actinides are in the vicinity of the neutron number $N = 152$, a region associated with a deformed sub-shell closure. The precise mass measurements allow the exploration of nuclear structure through trends in mass filters, such as S_{2n} (two-neutron separation energies) and $\delta V_{p,n}$ (average p-n interaction of the most loosely-bound two nucleons), as well as their differentials. Further measurements of actinides are planned to enhance the current dataset and contribute to ongoing nuclear structure studies. In this presentation, an overview of the current status of the experiment, as well as future directions, will be discussed.

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