

Abstract Submitted
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Precision mass measurements of highly charged ions A.A. KWIATKOWSKI, TRIUMF, J.C. BALE, Simon Fraser Univ. and TRIUMF, T. BRUNNER¹, Technische Universität München and TRIUMF, A. CHAUDHURI, TRIUMF, U. CHOWDHURY, Univ. of Manitoba and TRIUMF, S. ETTENAUER, Univ. of British Columbia and TRIUMF, D. FREKERS, Westfälische Wilhelms-Universität, A.T. GALLANT, Univ. of British Columbia and TRIUMF, A. GROSSHEIM, TRIUMF, A. LENNARZ, Westfälische Wilhelms-Universität, E. MANE, TRIUMF, T.D. MACDONALD, Univ. of British Columbia and TRIUMF, B.E. SCHULTZ, M.C. SIMON, TRIUMF, V.V. SIMON, Ruprecht-Karls-Universität and MPI and TRIUMF, J. DILLING, Univ. of British Columbia and TRIUMF — The reputation of Penning trap mass spectrometry for accuracy and precision was established with singly charged ions (SCI); however, the achievable precision and resolving power can be extended by using highly charged ions (HCI). The TITAN facility has demonstrated these enhancements for long-lived ($T_{1/2} \geq 50$ ms) isobars and low-lying isomers, including $^{71}\text{Ge}^{21+}$, $^{74}\text{Rb}^{8+}$, $^{78}\text{Rb}^{8+}$, and $^{98}\text{Rb}^{15+}$. The Q -value of ^{71}Ge enters into the neutrino cross section, and the use of HCI reduced the resolving power required to distinguish the isobars from 3×10^5 to 20. The precision achieved in the measurement of $^{74}\text{Rb}^{8+}$, a superallowed β -emitter and candidate to test the CVC hypothesis, rivaled earlier measurements with SCI in a fraction of the time. The 111.19(22) keV isomeric state in ^{78}Rb was resolved from the ground state. Mass measurements of neutron-rich Rb and Sr isotopes near $A = 100$ aid in determining the r-process pathway. Advanced ion manipulation techniques and recent results will be presented.

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