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(G*) Mass investigations at the intersection of the N=82 shell closure and the proton drip-line

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The proton drip-line is not firmly established for heavy masses. Near N=82, the masses of neutron-deficient Yb and Tm isotopes were measured. In Tm (Z=69), the precise location of the drip-line could be determined, and for both isotopic chains the stabilizing effect of the N=82 shell was examined. These elements now represent the largest atomic numbers at which this shell closure has been directly probed through the 2-neutron separation energy.

These measurements were accomplished using the recently commissioned Multiple Reflection, Time-Of-Flight Mass Spectrometer at the TITAN facility. Its sensitivity and in-device beam purification capabilities permitted the determination of not only the ground-state masses, but also that of a long-lived isomer in ¹⁵¹Yb. In this presentation an overview of the measurement technique will be given before the scientific results are discussed.

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