

Abstract Submitted
for the SES14 Meeting of
The American Physical Society

Atomic Masses of Tritium and Helium-3¹ BRIDGET WESSON, ANKE WAGNER, HOLGER KRACKE, EDMUND MYERS, Florida State University — By measuring the cyclotron frequency ratios of ${}^3\text{He}^+$ to HD^+ and T^+ to HD^+ , and using HD^+ as a mass reference, we obtain new atomic masses for ${}^3\text{He}$ and T. Our results are $M[{}^3\text{He}] = 3.016\,029\,322\,43(19)$ u and $M[\text{T}] = 3.016\,049\,281\,78(19)$ u, where the uncertainty includes an uncertainty of 0.12 nu in the mass reference. Allowing for cancellation of common systematic errors, we find the Q-value for tritium beta-decay to be $(M[\text{T}] - M[{}^3\text{He}])c^2 = 18\,592.01(7)$ eV. This allows an improved test of systematics in measurements of tritium beta-decay that set limits on neutrino mass.

¹Support by the NSF under PHY-0968889 and by the NIST PMG program.

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Date submitted: 03 Oct 2014

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