Abstract Submitted
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Penning trap mass spectrometry Q-value determinations for highly-forbidden β-decay[1] RACHEL SANDLER, MATT REDSHAW, KERIM GULYUZ, NADEESHA GAMAGE, Central Michigan University, GEORG BOLLEN, RYAN RINGLE, National Superconducting Cyclotron Laboratory, MARTIN EIBACH, University of Mainz, ALEC HAMAKER, CHRIS IZZO, DANIEL PUENTES, ISAAC YANDOW, Michigan State University — Over the last several decades, extremely sensitive, ultra-low background beta-particle and gamma-ray detection techniques have been developed. These techniques have enabled the observation of very rare processes, such as highly forbidden beta decays e.g. of ^{113}Cd , ^{50}V, and ^{138}La. Half-life measurements of highly forbidden beta decays provide a testing ground for theoretical nuclear models, and the comparison of calculated and measured energy spectra could enable a determination of the values of the weak coupling constants. Precision Q-value measurements also allow for systematic testing of the beta-particle detection techniques. We will present the results and current status of Q value determinations for highly forbidden beta decays of ^{113}Cd, ^{50}V, and ^{138}La. The Q values, corresponding to the mass difference between parent and daughter nuclides, are measured using the high precision Penning trap mass spectrometer LEBIT at the NSCL.

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