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Beta decay spectroscopy of Europium-160

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Although the nuclear shell model does well to predict the structure of spherical nuclei, its ability to describe deformed nuclei far from shell closures is lacking. Models attempting to describe the structure of deformed nuclei, both from the microscopic and macroscopic perspective, require information on the excited energy levels of these nuclei in order to improve their predicting power. Incomplete and disagreeing information on the beta decay scheme of ^{160}Eu to ^{160}Gd has been previously published [1,2], so a comprehensive picture of this decay is not yet available. Recently published data [3] improves the decay scheme, though there are still many unplaced levels and gamma-ray transitions, and information on beta-feeding intensities is lacking. At TRIUMF-ISAC, ^{160}Eu beta decay data was collected using the GRIFFIN (Gamma-Ray Infrastructure For Fundamental Investigations of Nuclei) array of high-purity germanium detectors coupled with LaBr$_3$ fast-timing detectors and a conversion electron spectrometer. Over 10 million decays were recorded, allowing a comprehensive analysis of the beta decay of ^{160}Eu. New results from the ongoing analysis of this decay will be presented.

[1] N. A. Morcos et al., J. Inorg. Nucl. Chem. 35, 3659 (1973).
[2] J. M. D'Auria et al., Can. J. Phys. 51, 686 (1973).
[3] D. Hartley et al., Phys Rev. Lett. 120, 182502 (2018).

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