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Status update on β-ν correlation measurement in β-decay of ^{8}B[1]

ADRIAN PEREZ GALVAN, Physics Division, Argonne National Laboratory, BPT COLLABORATION TEAM — Precise measurements of the β-ν angular correlation coefficient ($a_{\beta\nu}$) in β-decay provide information on the presence of possible exotic couplings in the weak interaction. The ^{8}Li-^{8}B radioactive mirror nuclei represent a particularly attractive system for these studies due to their small masses, large Q-value, and a triple-correlation between the charged lepton and the two α-particles coming from the decay of the daughter ^{8}Be that allows the extraction of $a_{\beta\nu}$ with higher sensitivity. Furthermore, it is possible to perform tests of the existence of second-class-currents in the Standard Model and the conserved-vector-current hypothesis by comparing correlation measurements in ^{8}Li and ^{8}B. Our collaboration has already performed detailed studies of the angular correlation with a trapped sample of cold ^{8}Li ions in the Beta-Decay Paul trap (BPT) at Argonne National Laboratory with an uncertainty below 1%. In this talk we present performance tests of our experimental setup with observed decays of ^{8}B at the BPT as well as the current status on the effort to achieve a measurement with comparable sensitivity.

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Adrian Perez Galvan
Physics Division, Argonne National Laboratory

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