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High-Precision Superallowed Fermi β Decay Measurements at TRIUMF-ISAC¹

C.E. SVENSSON, University of Guelph, G.C. BALL, TRIUMF, ISAC SUPERALLOWED COLLABORATION

High-precision measurements of the ft -values for superallowed Fermi β decays between nuclear isobaric analogue states provide demanding tests of the electroweak Standard Model, including confirmation of the Conserved Vector Current hypothesis at the level of 1.2×10^{-4} , the most stringent limits on weak scalar currents, and the most precise determination of the V_{ud} element of the CKM quark-mixing matrix. The Isotope Separator and Accelerator (ISAC) facility at TRIUMF produces high-quality beams of several of the superallowed emitters with world-record intensities and hosts a suite of state-of-the-art spectrometers for the measurement of superallowed half-lives, branching ratios, Q_{EC} values, and charge-radii. Recent highlights from the superallowed program at ISAC, including high-precision half-life measurements for the light superallowed emitters ^{10}C , ^{14}O , ^{18}Ne , and ^{26m}Al and branching-ratio measurements for the heavy superallowed emitters ^{62}Ga and ^{74}Rb will be presented. The impact of these measurements on tests of the Standard Model, and future developments in the superallowed program at ISAC with the new high-efficiency GRIFFIN γ - *ray* spectrometer, will be discussed.

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