High-Precision Superallowed Fermi $\beta$ Decay Measurements at TRIUMF-ISAC$^1$

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High-precision measurements of the $ft$-values for superallowed Fermi $\beta$ 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 $1.2 \times 10^{-4}$, 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 $\gamma$ - ray spectrometer, will be discussed.

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