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High-Precision Half-Life Measurements for the Superallowed β^+ emitter ^{10}C MICHELLE DUNLOP, University of Guelph — High precision measurements of superallowed Fermi beta transitions between 0^+ isobaric analogue states allow for stringent tests of the electroweak interaction described by the Standard Model. These transitions provide an experimental probe of the unitary of the Cabibbo-Kobayashi-Maskawa matrix, the Conserved-Vector-Current hypothesis, as well as set limits on the existence of scalar currents in the weak interaction. Half-life measurements for the lightest of the superallowed emitters are of particular interest as the low-Z superallowed decays are most sensitive to a possible scalar current contribution. The half-life of ^{10}C can be measured by directly counting the β particles or measuring the γ-ray activity following β decay. Previous results for the ^{10}C half-life measured via these two methods differ at the 1.5σ level, motivating further independent measurements of the ^{10}C half-life using both techniques. Recent ^{10}C half-life measurements via both gamma-ray photo-peak and direct beta counting were performed at TRIUMF's Isotope Separator and Accelerator facility. This presentation will highlight the importance of these measurements and preliminary half-life results will be presented.

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