

Abstract Submitted
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High-Precision Half-Life Measurement for the Superallowed β^+ Emitter ^{22}Mg MICHELLE DUNLOP, University of Guelph — High precision measurements of the $\mathcal{F}\square$ values for superallowed Fermi beta transitions between 0^+ isobaric analogue states allow for stringent tests of the electroweak interaction. These transitions provide an experimental probe of the Conserved-Vector-Current hypothesis, the most precise determination of the up-down element of the Cabibbo-Kobayashi-Maskawa matrix, and set stringent limits on the existence of scalar currents in the weak interaction. To calculate the $\mathcal{F}\square$ values several theoretical corrections must be applied to the experimental data, some of which have large model dependent variations. Precise experimental determinations of the ft values can be used to help constrain the different models. The uncertainty in the ^{22}Mg superallowed $\mathcal{F}\square$ value is dominated by the uncertainty in the experimental ft value. The adopted half-life of ^{22}Mg is determined from two measurements which disagree with one another, resulting in the inflation of the weighted-average half-life uncertainty by a factor of 2. The ^{22}Mg half-life was measured with a precision of 0.02% via direct β counting at TRIUMF's ISAC facility, leading to an improvement in the world-average half-life by more than a factor of 3.

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