

Abstract Submitted
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High-Precision Half-life Measurement for the Superallowed β^+ Emitter ^{14}O ALEX LAFFOLEY, University of Guelph — High-precision measurements of superallowed Fermi beta decays between 0^+ isobaric analog states have provided an invaluable probe of the Standard Model description of the electroweak interaction. Half-life measurements of the lightest of these, ^{10}C and ^{14}O , are of particular interest as the low- Z superallowed decays are most sensitive to a possible scalar current contribution. There are two primary methods for measuring the half-lives of ^{10}C and ^{14}O ; one can directly count the beta particles or measure the gamma activity since both decay to an excited state of the daughter which then emit a characteristic gamma-ray. Comparing the experiments that detected the gamma-rays and those that perform beta counting measurements yield results that disagree with each other at the level of 0.11% (1.3σ) for ^{14}O and 0.13% (2.6σ) for ^{10}C . This provides motivation for a set of high-precision half-life measurements for ^{10}C and ^{14}O via both gamma-ray photopeak and direct beta counting techniques at TRIUMF to address the systematics between the methods used. The first of several experiments was performed at TRIUMF's ISAC facility in November 2011. This talk will highlight the importance and preliminary results of these measurements.

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