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Confirmation of Precise Branching Ratio Measurement in the β Decay of ^{34}Ar V.E. IACOB, J.C. HARDY, V. GOLOVKO, Cyclotron Institute at Texas A&M University — Precise *ft*-values for superallowed $0^+ \rightarrow 0^+$ β^+-decays yield a demanding test of the Standard Model via the unitarity of the Cabibbo-Kobayashi-Maskawa matrix. One of the ingredients of an *ft*-value is the transition branching ratio which, to be relevant for the unitarity test, must be measured with a precision of $\sim$0.1% or better. After a preliminary report of such a measurement for ^{34}Ar [1], we have verified our methods and tested for any possible systematic effects by measuring the decay of ^{10}C under similar conditions. This nucleus is very well suited for a test of the data reduction method: it has a simple decay scheme without a ground-state branch, and all decay branches generate a 718 keV gamma ray. As with the ^{34}Ar measurement, an implanted ^{10}C source was placed between a plastic scintillator for β particles and a HPGe detector that is efficiency calibrated with high precision (0.2% between 50 and 1400 keV). Both β singles and $\beta - \gamma$ coincidences were then recorded, and the collect/move/detect cycle was repeated until the desired statistical accuracy was obtained. We determined experimentally that the percentage of ^{10}C decays leading to a 718 keV gamma ray is statistically consistent with the expected 100%. This result validates our methods and reinforces the branching-ratio value previously obtained for the ^{34}Ar decay. [1] V. Iacob *et al.*, Bulletin APS 52, (37) Apr-Meeting 2007

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