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Superallowed Branching Ratio in the β Decay of ^{34}Ar V.E. IACOB, J.C. HARDY, Cyclotron Institute at Texas A&M University — Precise *ft*-values for superallowed $0^+ \rightarrow 0^+$ β^+-decays contribute to the most demanding unitarity test of the Cabibbo-Kobayashi-Maskawa matrix. The decays from T_z=-1 nuclei, like ^{34}Ar, are particularly valuable because they can constrain the isospin symmetry-breaking corrections that must be applied to the measured *ft*-values. This requires their branching ratios to be determined to $\sim$0.1% or better. We report here on our continuing quest to reach this goal, which most recently has involved better control of our detection geometry (with laser ranging) and continuous monitoring of dead-time. We produced a pure ^{34}Ar beam at the exit of the MARS recoil separator using a 25A MeV ^{35}Cl beam from the Texas A&M cyclotron to bombard a hydrogen gas target. The ^{34}Ar beam was extracted into air, degraded and implanted into the Mylar tape of our fast transport system. In repeated cycles, each ^{34}Ar sample was collected for 2s and then moved in 175 ms to the center of a well-shielded $\beta - \gamma$ counting station, where β singles and $\beta - \gamma$ coincidences were recorded for 2s. The β's were detected in a1-mm-thick plastic scintillator, while the γ's were detected by our precisely efficiency-calibrated HPGe detector. With the laser sensor we read the tape-to-HPGe distance to a precision better than 0.1mm and recorded it for each cycle. Branching-ratio results will be reported.

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