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Precise branching ratios from $\beta-\gamma$ coincidences: the case of ^{34}Ar. V.E. IACOB, J.C. HARDY, V. GOLOVKO[1] — The experiment reported here aims to extract a precise *ft*-value for the superallowed $0^+ \rightarrow 0^+$ β^+-decay of ^{34}Ar. Such measurements are essential in testing the Standard Model via the unitarity of the Cabibbo-Kobayashi-Maskawa matrix. One ingredient in the ft-value is the branching ratio and, to be useful, it must be determined with a precision of ∼0.1% or better. Since the β^+-decay of ^{34}Ar populates the ground-state as well as excited states of the $^{3^{34}}Cl$ daughter, to determine the branching ratio, we require $\beta-\gamma$ coincidences as well as β singles, both with well determined intensities. Gammas were measured with our precisely calibrated HPGe detector whose absolute efficiency is known to 0.2% for energies between 50 and 1400 keV and to 0.4% from 1400 to 3500 keV. For the β detector we also require accurate relative efficiencies. To this end, we have compared the recorded beta spectra – in singles and in coincidence with individual γ-ray peaks – with Monte Carlo calculations performed with the DOSRZNRC program (from the EGS package) [1]. Good agreement was obtained over a wide energy range, allowing us to extract precise branching-ratio results. [1] NRCC Report PIRS-701 and http://www.irs.inms.nrc.ca/inms/irs/EGSnrc/EGSnrc.html

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