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Precision tests of calculated internal-conversion coefficients: the case of ^{134}Cs W.E. ROCKWELL, Mount Holyoke College, H.I. PARK, J. GOODWIN, N. NICA, V.E. IACOB, J.C. HARDY, Cyclotron Institute, Texas A&M University — Internal conversion coefficients (ICC) play an important role in nuclear decay schemes. Yet, the tabulated results of ICC calculations are only known to agree with experiment on average to within a few percent, and there are some cases of much more significant discrepancies. In particular, for transitions with energies close to an atomic-electron binding energy, the calculated ICC values depend strongly on how the theory deals with the hole left by the departing conversion electron. One approach assumes that it is filled instantaneously, while the other considers that it stays empty throughout the entire conversion process. To date there are few exact measurements of ICCs with an uncertainty below one percent and this lack of precision makes it difficult to be definitive about the validity of either theory. We are embarked on a program to rectify this situation. In our present experiment we aim to measure the K-shell ICC for the 128-keV E3 transition in ^{134}Cs with a precision of one percent or better. The experimental value of its ICC, as currently evaluated, does not fit particularly well with any available theory [see S. Raman *et al*, Phys. Rev. C 66, 044312 (2002)].

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