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Precise measurements of α_k for the 346.5 keV M4 transition from $^{197}Pt^m$: A test of internal conversion theory[1] J. NOLAN, Centenary College of Louisiana, N. NICA, J.C. HARDY, Texas A&M University Cyclotron Institute, M. HERNBERG, University of Iowa, J.R. GOODWIN, V.E. IACOB, Texas A&M University Cyclotron Institute — Precise values for internal conversion coefficients (ICCs) are important in the study of nuclear decay schemes; they are also useful for detector efficiency calibration. A recent survey revealed that few measured ICCs are known to a high precision ($\sim 1\%$); in addition, there is some theoretical uncertainty over how to deal with the atomic vacancy left by the departing electron during the internal conversion process. Texas A&M has previously precisely measured the ICCs for ^{193}Ir, ^{137}Ba, and ^{134}Cs as a test of internal conversion theory; we now consider the ICC for $^{197}Pt^m$ as a further test. The $^{197}Pt^m$was produced by thermal neutron activation of separated ^{196}Pt (97.43% pure). Two separate sources were produced; x-ray and gamma-ray emissions from each source were recorded by a High Purity Germanium Detector (+/- 0.20% absolute efficiency uncertainty). After impurity subtraction and attenuation correction, preliminary results for the α_k value for the two sources have now been obtained. The α_k from source one is 4.24 (13); the α_k from source two is 4.26 (8). While these values are still tentative, the results show agreement with the theory that considers the atomic vacancy.

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