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Precise α_K Measurement of 346.5 keV Transition in ¹⁹⁷Pt as a Test of Internal Conversion Theory¹ MARK HERNBERG, University of Iowa, JOHN HARDY, NINEL NICA, JOHN GOODWIN, VICTOR IACOB, Cyclotron Institute, Texas A&M University — We have determined the K-shell internal conversion coefficient (ICC) of the 346.5 keV M4 transition in ¹⁹⁷Pt using an HPGe detector at the Texas A&M University Cyclotron. ICCs are used in the study of nuclear decay schemes, branching ratios and transition rates, as well as spin and parity assignments. We have recently been measuring ICCs (in ¹⁹³Ir , ¹³⁷Ba, ¹³⁴Cs) with the specific purpose of testing the method used to treat the atomic vacancy in calculating ICCs. Previous measurements of the ICC for the 346.5 keV transition in ¹⁹⁷Pt have disagreed significantly from calculated coefficients regardless of the method used to consider the vacancy. This could have indicated some other unknown factor causing a problem in the calculations. Our preliminary result, determined with an uncertainty of 3% is $\alpha_K = 4.24(13)$. This disagrees with previous measurements ($\alpha_K = 4.02(8)$) and is now consistent with the calculated ICCs.

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