Abstract Submitted
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Precise Measurements of the Internal Conversion Coefficient of ^{111m}Cd Isomer[1] LAURA PINEDA, NINEL NICA, JOHN HARDY, Cyclotron Institute, Texas A&M — The theoretical Internal Conversion Coefficient, α_K, for the 150 keV E3 transition in ^{111m}Cd depends on the treatment of the atomic vacancy. If the atomic vacancy is taken into consideration, the α_K value equals to 1.450, while the α_K value is 1.425 when the vacancy is neglected. In an 1987 publication, the α_K was determined to be 1.29 $\pm$ 0.11, which agrees with neither value. To investigate this discrepancy, we conducted an experiment to remeasure the α_K of ^{111m}Cd. By using a 99% enriched ^{110}Cd sample and activating it with thermal neutrons, we produced the desired ^{111m}Cd isomer. With a very well calibrated High Purity Germanium detector, the gamma-rays as well as the X-rays corresponding to the 150 keV transition were observed, and their relative intensities measured. Our preliminary α_K value results is 1.458 $\pm$ 15, which agrees with the theoretical α_K value that includes the atomic vacancy, and disagrees with the no-vacancy calculation.

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Laura Pineda
Cyclotron Institute, Texas A&M

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