Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

**A Further Test of Internal Conversion Theory with the 88.26-keV $M4$ transition in $^{127m}$Te**[1] KRISTYN BRANDENBURG, NINEL NICA, JOHN HARDY, Texas A&M Cyclotron Institute — The 106-day isomer in $^{127m}$Te decays by an 88.26-keV $M4$ transition to the ground state. We have measured the intensity of the gamma rays from this transition relative to the K x-rays, which are produced when it converts. We have also accounted for all impurities that contributed (weakly) to those intensities. Combining our result with the known K-shell fluorescence yield for tellurium of 0.875(4) yields $\alpha_K = 489(7)$ for the K-shell internal conversion coefficient (ICC). Previous ICC measurements on other $M4$ and $E3$ transitions by our group have shown that the effect of the hole created by conversion in the atomic K shell should be included in ICC calculations. Theoretical predictions for $\alpha_K$ that account for the hole in the atomic K shell of $^{127}$Te yield 484(2), while predictions that do not include the hole yield 468(2). Our new result provides further evidence that the hole must be included in ICC calculations.

[1]Funded by DOE and NSF-REU Program.

Kristyn Brandenburg
Cyclotron Institute

Date submitted: 01 Aug 2013 Electronic form version 1.4