Branching ratio of electron capture in the decay of ^{100}Tc

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We have completed analysis of the experiment to measure the electron capture branch for ^{100}Tc. The spectrum of x-rays observed in anti-coincidence with a scintillator (which has near 4π coverage to veto the dominant β^- branch) is shown in Fig. 1. The branching ratio for electron capture was found to be $B(\mathrm{EC}) = (2.6\pm0.4)\times10^{-5}$, and this was published in Physical Review C [1]. This branching ratio can be used as a benchmark calculation for models of two-neutrino and neutrinoless double-β decay.

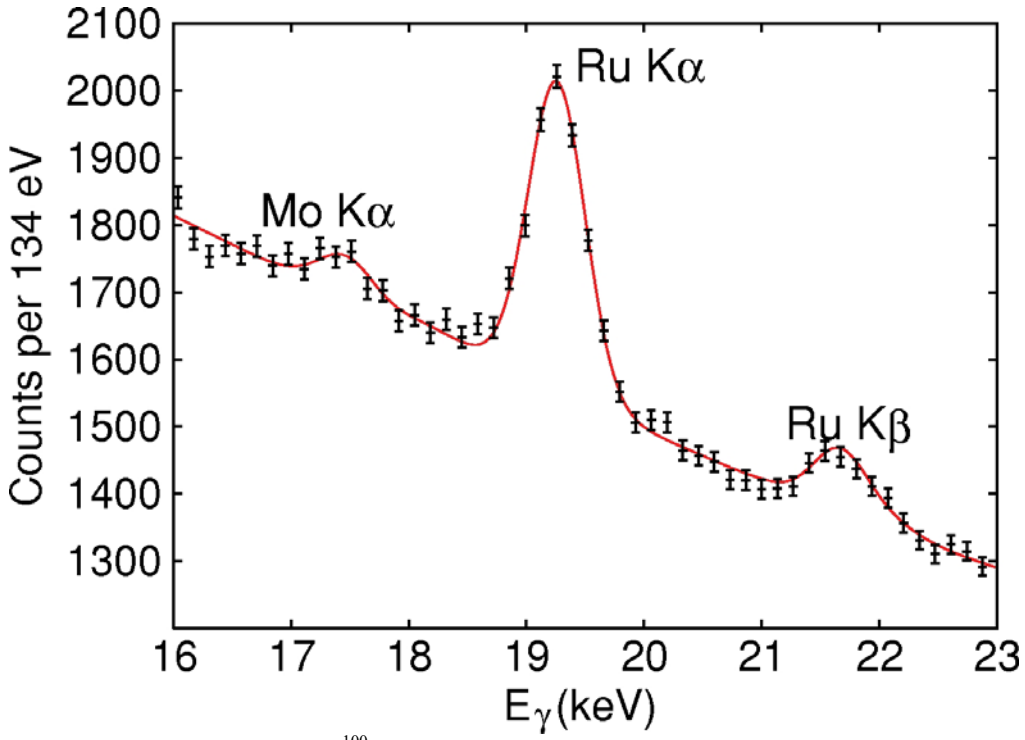

FIG. 1. X-ray spectrum from ^{100}Tc. The Mo x-rays are produced in EC decays while the dominant Ru x-rays are produced following β^- decays.

In the fall of 2009, we are going to perform a similar experiment to measure the EC branch of ^{116}In, again at the JYFL facility in Jyväskylä. The structure of nuclei in the region of A=116 are known to have small deformations which affect theory calculations; the EC branch of ^{116}In, like ^{110}Tc, can also serve as a benchmark calculation for interpreting the results of double-β decay experiments.

[1] S. K. L. Sjue *et al.*, Phys. Rev. C **78**, 064317 (2008).