Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Toy Monte Carlo Simulations Mirroring K-Long Decay, as Studied by the K0TO Experiment[1] CHRISTIANA ERBA, University of Rochester, K0TO COLLABORATION[2] — The K0TO experiment studies the rare, flavor-changing neutral current, second-order weak decay of the K-Long meson into a Pi-Zero meson, a neutrino, and the corresponding anti-neutrino. Through Toy Monte Carlo simulations enacted using Mathematica 8 software, the fundamental physical basis of this decay is explored. In addition, the secondary decay of the Pi-Zero meson into two photons is considered. Using information generated from the program's virtual particles, the transverse momentum and "center of energy" of the photons are calculated and graphed, revealing a linear relationship between the "center of energy" of the photons and the transverse momentum of the parent Pion.

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[2]This work was done as a part of the University of Michigan, Ann Arbor's Summer 2012 REU Program, under the advisement of Dr. Myron Campbell and his colleagues.

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Date submitted: 11 Jan 2013 Electronic form version 1.4