

Abstract Submitted
for the DNP08 Meeting of
The American Physical Society

Activity Calculations using HPGe Detectors and Monte Carlo Efficiencies KEVIN MACON, UNC-CH Experimental Particle Astrophysics Group — The next generation of experiments in particle astrophysics will require extremely low and well-known backgrounds. This requires performing experiments with low activity materials and going underground to escape the ubiquitous cosmic-ray background. Current radiometric assays using low background HPGe detectors at the recently established Kimballton Underground Research Facility for Low Background Counting (KURF LBC) examine the bulk activity of materials that will be used in direct dark matter searches such as Mini-CLEAN and in the search for $0\nu\beta\beta$ by the MAJORANA Collaboration. Finding the bulk activity from the spectra of a measured sample is involved. To account for branching ratios, geometry effects, and attenuation in the sample and non-active parts of the detector— Monte Carlo calculations of peak acceptances were made using the MaGe/GEANT4 simulation package in addition to modeling the affect of energy resolution on peak height to continuum ratio from fitted data.

Kevin Macon
UNC-CH Experimental Particle Astrophysics Group

Date submitted: 01 Aug 2008

Electronic form version 1.4