

Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

Background Reduction by Gamma-ray Tracking Detectors¹

MARIO CROMAZ, Lawrence Berkeley National Laboratory — Low-energy cross-section measurements of capture reactions for astrophysics applications are often limited by gamma-ray background. This background may be reduced with the recent advent of high resolution HPGe tracking detectors which are capable of rejecting background gamma-rays which do not originate from the target position. This is accomplished by segmenting the outer contact of the HPGe crystal and analyzing the transient currents generated at the segments to locate the individual scattering points of the gamma ray and the energy deposited within the crystal. Using the Compton-scattering relation, one can define a cone which specifies the direction of the incident gamma-ray. Furthermore, one can discern from the positions and energies of the scattering points if the gamma-ray scattered out of the crystal. Simulations will be presented that outline detector performance as well as achievable background reduction factors based on the performance characteristics of the prototype detectors for the GRETINA spectrometer.

¹Supported by the U.S. DoE, LBNL Contract No. DE-AC02-05CH11231

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Date submitted: 30 Jun 2006

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