Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

**Cross section measurements for $\gamma$-rays emitted in $^{109}$Ag$(n, xnyp\gamma)$ reactions** N. FOTIADES, M. DEVLIN, R.O. NELSON, T. KAWANO, LANL, J.J. CARROLL, USArmy Research Laboratory — Absolute partial cross sections for production of discrete $\gamma$-rays using $^{109}$Ag$(n, xnyp\gamma)$ reactions with $x \leq 7$ and $y \leq 1$ in a total of 12 reaction channels were measured. The data were taken using the GEANIE spectrometer comprised of 20 high-purity Ge detectors with BGO escape-suppression shields. The broad-spectrum pulsed neutron beam of the Los Alamos Neutron Science Center's (LANSCE) WNR facility provided neutrons in the energy range from 1 to 300 MeV. The time-of-flight technique was used to determine the incident neutron energies. Partial $\gamma$-ray cross sections for a total of 109 transitions and for neutron energies 1 MeV$< E_n <$300 MeV were obtained. Five previously unknown transitions were identified, were assigned to $^{109}$Ag, and were placed in the level scheme. An estimate of the population of isomers in the $(n, n')$, $(n, 2n)$ and $(n, 3n)$ channels was made. Theoretical calculations up to $E_n = 100$ MeV from the $CoH_3$ reaction model are compared to the experimental results.

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Date submitted: 15 Jun 2015 Electronic form version 1.4