

Abstract Submitted  
for the DNP13 Meeting of  
The American Physical Society

**Cross section measurements for  $\gamma$ -rays emitted in  $^{86}\text{Kr}(n, xny\gamma)$  reactions** N. FOTIADES, M. DEVLIN, R.O. NELSON, LANL, USA, T. GRANIER, CEA, France — Absolute partial cross sections for production of discrete  $\gamma$ -rays using  $^{86}\text{Kr}(n, xny\gamma)$  reactions with  $x \leq 5$  and  $y \leq 1$  in a total of 8 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 over a wide energy range. The time-of-flight technique was used to determine the incident neutron energies. Partial  $\gamma$ -ray cross sections have been measured for a total of 35  $\gamma$ -rays and for neutron energies  $1 \text{ MeV} < E_n < 100 \text{ MeV}$ . Ten transitions were observed for the first time and were assigned to  $^{86}\text{Kr}$  as deexciting five previously known levels, among them the second and third  $0^+$  states, and one new level. All previously known levels of  $^{86}\text{Kr}$  with excitation energy up to 3.7 MeV were identified, and the new level was observed at 2917-keV excitation energy. Predictions from shell model calculations are compared with the data. Parts of these results were recently published in reference: N. Fotiades *et al.*, Phys. Rev. C **87**, 044336 (2013).

Ronald Nelson  
LANL

Date submitted: 15 May 2013

Electronic form version 1.4