

Abstract Submitted  
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**Photonuclear Physics at Lawrence Livermore National Lab**<sup>1</sup> M.S. JOHNSON, C.A. HAGMANN, J.M. HALL, D.P. MCNABB, LLNL, J.H. KELLEY, NCSU, E. KWAN, G. RUSEV, A.P. TONCHEV, H.R. WELLER, Duke University, S.L. HAMMOND, UNC — National security and international safeguards programs have expressed interest in developing photon sources and detection systems to detect and/or isotopically map shipping containers, fuel assemblies, and waste barrels for special nuclear material (SNM). Current detection systems include basic radiography that gives a density silhouette of a container's contents. Other detection systems include passive arrays that are susceptible to background contamination. Current assay systems use destructive methods to determine isotopic content in fuel rods. This presentation will highlight some of the ambitious efforts at LLNL to exploit processes such as nuclear resonance fluorescence and other photonuclear processes to detect SNM, directly assay fuel rods and waste barrels, and isotopically map configurations of containers. This presentation will include benchmarking measurements at the HIGS facility to characterize detection systems and developing photon sources and recent and ongoing scientific measurements.

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