

Abstract Submitted
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Detector Array Performance Estimates for Nuclear Resonance Fluorescence Applications¹ MICAH JOHNSON, Lawrence Livermore National Laboratory, San Jose State University, J.M. HALL, D.P. MCNABB, Lawrence Livermore National Laboratory — There are a myriad of explorative efforts underway at several institutions to determine the feasibility of using photonuclear reactions to detect and assay materials of varying complexity and compositions. One photonuclear process that is being explored for several applications is nuclear resonance fluorescence (NRF). NRF is interesting because the resonant lines are unique to each isotope and the widths are sufficiently narrow and the level densities are sufficiently low so as to not cause interference. Therefore, NRF provides a means to isoptically map containers and materials. The choice of detector array is determined by the application and the source. We will present results from a variety of application studies of an assortment of detector arrays that may be useful. Our results stem from simulation and modeling exercises and benchmarking measurements. We will discuss the data requirements from basic scientific research that enables these application studies. We will discuss our results and the future outlook of this technology.

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Micah Johnson
LLNL, SJSU

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