Abstract Submitted
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The statistical decay properties of Gadolinium isotopes using the DANCE array D. DASHDORJ, G. MITCHELL, B. BARAMSAI, R. CHANKOVA, A. CHYZH, C. WALKER, North Carolina State University, Raleigh, NC 27695 and Triangle Universities Nuclear Laboratory, Durham, NC 27708, DANCE COLLABORATION — The gadolinium isotopes are interesting for reactor applications as well as for medicine and astrophysics. There are seven stable isotopes of gadolinium with varying deformation. Decay γ rays following neutron capture on Gd isotopes are detected by the DANCE array, which is located at flight path 14 at the Lujan Neutron Scattering Center at Los Alamos National Laboratory. The high segmentation and close packing of the detector array enable γ-ray multiplicity measurements. The calorimetric property of the DANCE array coupled with the neutron time-of-flight technique enables one to gate on a specific resonance of a specific isotope in the time-of-flight spectrum and obtain the summed energy spectrum for that isotope. The singles γ-ray spectrum for each multiplicity can be separated by their DANCE cluster multiplicity. Various photon strength function models are used for comparison with experimentally measured DANCE data and provide insight for understanding the statistical decay properties of deformed nuclei.

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