

Abstract Submitted
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Quantifying the effects of neutron scattering for neutron yield isotropy measurements at the NIF¹ K. D. HAHN, R. M. BIONTA, H. KHATER, E. A. HENRY, A. S. MOORE, D. J. SCHLOSSBERG, D. A. BARKER, E. R. CASCO, R. B. EHRLICH, J. M. GJEMSO, A. B. GOLOD, G. P. GRIM, E. P. HARTOUNI, S. M. KERR, Lawrence Livermore National Laboratory — The neutron yield diagnostics at the NIF have been upgraded to include 48 detectors placed around the NIF target chamber to assess the DT neutron yield isotropy for inertial confinement fusion experiments. The real-time neutron-activation detectors (RT-NADs) are used to understand yield asymmetries due to variations in the fuel and ablator areal densities, Doppler shifts in the neutron energy due to hotspot motion, and other physics effects. In order to isolate target physics effects, we must understand the contribution due to neutron scattering associated with the different hardware configurations used for each experiment. Our goal is to achieve 1% or better precision in determining the yield isotropy. We present Monte Carlo simulations and experimental measurements to quantify this impact.

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