

Abstract Submitted  
for the HAW09 Meeting of  
The American Physical Society

**Neutron Activation Diagnostic at the National Ignition Facility<sup>1</sup>**

DARREN BLEUEL, Lawrence Livermore National Laboratory — A new cost-effective implementation of a Neutron Activation Diagnostic at the National Ignition Facility (NIF) will complement the Magnetic Recoil Spectrometer (MRS) and neutron Time-of-Flight (nToF) diagnostics by measuring the spatial distribution of downscattered neutrons ( $\sim 10\text{-}13$  MeV) in the NIF chamber. This helps quantify the angle-to-angle “sampling error” in those devices due to their single-position insensitivity to capsule implosion asymmetries. It will also provide a high-accuracy ( $<2\%$  uncertainty) absolute measurement of the primary DT neutron yield. Activation samples will be mounted on three roughly-orthogonal DIMs (Diagnostic Instrument Manipulators), including one near the MRS for normalization. Only reactions with long half-lives (several hours to days) will be used and the samples will be removed manually. The ratio of the neutron-induced activities of downscatter-sensitive to downscatter-insensitive reactions allows determination of angular variation in the downscattered fraction in the chamber with most systematic uncertainties minimized.

<sup>1</sup>Prepared by LLNL under Contract DE-AC52-07NA27344.

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Date submitted: 29 Jun 2009

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