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NIF Gamma Reaction History H.W. HERRMANN, Y. KIM, C.S. YOUNG, J.M. MACK, A.M. MCEVOY, N.M. HOFFMAN, D.C. WILSON, J.R. LANGENBRUNNER, S. EVANS, LANL, S.H. BATHA, W. STOEFFL, A. LEE, LLNL, C.J. HORSFIELD, M. RUBERY, AWE, E.K. MILLER, R.M. MALONE, M.I. KAUFMAN, NSTec — The primary objective of the NIF Gamma Reaction History (GRH) diagnostics is to provide bang time and burn width information based upon measurement of fusion gamma-rays. This is accomplished with energy-thresholded Gas Cherenkov detectors that convert MeV gamma-rays into UV/visible photons for high-bandwidth optical detection. In addition, the GRH detectors can perform γ -ray spectroscopy to explore other nuclear processes from which additional significant implosion parameters may be inferred (e.g., plastic ablator areal density). Implementation is occurring in 2 phases: 1) four PMT-based channels mounted to the outside of the NIF target chamber at ~ 6 m from TCC (GRH-6m) for the $3e13$ - $3e16$ DT neutron yield range expected during the early ignition-tuning campaigns; and 2) several channels located just inside the target bay shield wall at ~ 15 m from TCC (GRH-15m) with optical paths leading through the wall into well-shielded streak cameras and PMTs for the $1e16$ - $1e20$ yield range expected during the DT ignition campaign. This suite of diagnostics will allow exploration of interesting γ -ray physics well beyond the ignition campaign. Recent data from OMEGA and NIF will be shown.

H.W. Herrmann
LANL

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