Neutron Image Analysis for the National Ignition Facility GARY GRIM, DAVID CLARK, CHRIS DANLY, DANIELLE ESQUIBEL, VALERIE FATHERLEY, NEVZAT GULER, DANIEL LEMIEUX, ERIC LOOMIS, FRANK MERRILL, GEORGE MORGAN, MARK WILKE[1], DOUG WILSON, LANL, DAVID FITTINGHOFF, DAN BOWER, BRIAN FELKER, MATTIAS FRANK, J. HOLLAWAY, DAN KALANTAR, BOB NYHOLM, PAT ROBERSON, LLNL, STEVE LUTZ, ROBERT MALONE, ROBERT BUCKLES, NSTec, JEFF KLINGMAN, BARBARA QUIVEY, LLNL, LANL TEAM, LLNL TEAM, NSTEC TEAM — To obtain ignition in inertial confinement fusion experiments (ICF) at the National Ignition Facility (NIF), sited at Lawrence Livermore National Laboratory, Livermore, CA, will require a careful balance of drive conditions created by the 192 beam, 1.8 MJ laser. Drive symmetry and strength in ICF experiments will be reflected in the shape and density of the deuterium and tritium fuel, and therefore collection and analysis of neutron images produced by thermonuclear reactions, or resultant scatters, will provide this diagnostic information. A description of the NIF neutron imaging system (NIS) analysis methods will be presented, including an overview of the imaging system, a theoretical description of the image formation process, current system models, resultant analysis methods, examples from recent sensitivity and validation studies, as well as imaging data obtained to date.

[1]Deceased

Gary Grim
LANL

Electronic form version 1.4