

Abstract Submitted
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Analysis of fusion neutron spectra and the importance of 6 dimensional effects in “high-foot” implosions at the National Ignition Facility¹ EDWARD P. HARTOUNI, JOSEPH A. CAGGIANO, DEBBIE CALLAHAN, DANIEL T. CASEY, CHARLIE CERJAN, DAN CLARKE, TILO DOEPPNER, MARK J. ECKART, JOHN E. FIELD, LLNL, JOHAN FRENJE, MARIA GATU-JOHNSON, PSFC, MIT, GARY P. GRIM, ROBERT HATARIK, OMAR A. HURRICANE, LLNL, JOSEPH KILKENNY, GA, JAMES KNAUER, LLE, TAMMY MA, OWEN M. MANNION, DAVID M. MUNRO, DANIEL B. SAYRE, BRIAN K. SPEARS, CHARLES B. YEAMANS, LLNL — High convergence implosions introduce a number of factors having significant effects on the analysis of high precision reactant neutron time-of-flight (TOF) spectra at the NIF. Low mode perturbations of both the spatial and velocity distributions of the hot-spot and the cold-fuel are measurable in this data set. We report on the analysis performed to date including the line-of-sight (LOS) variation of “standard observables” (e.g. the yield and ion temperature) as well as new analysis extracting the bulk hot-spot velocity and the hot-spot velocity variance. These observations indicate that the assumption of isotropy of reactant neutrons can no longer provide an accurate description of the data. Preliminary analysis of the NIF “high foot” campaign data will be reported. We will describe the direction of future nuclear diagnostic techniques.

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Edward Hartouni
Lawrence Livermore Natl Lab

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