

Abstract Submitted
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Spectrally Resolved Imaging of X-Ray Self Emission from NIF Implosions¹ T. MA, N. IZUMI, D.K. BRADLEY, C.J. CERJAN, S. DIXIT, O.L. LANDEN, A.J. MACKINNON, N.B. MEEZAN, R.R. PRASAD, P.T. SPRINGER, R.P.J. TOWN, S.V. WEBER, S.H. GLENZER, Lawrence Livermore National Laboratory, J.L. KLINE, G. KYRALA, Los Alamos National Laboratory — Accurately assessing and optimizing the implosion performance of inertial confinement fusion capsules is a crucial step to achieving ignition on the NIF. We have applied differential filtering (matched Ross filter pairs) to provide spectrally resolved time-integrated absolute emission images of the imploded core of cryogenic layered targets. By limiting the spectral range of imaging, we can diagnose the hydrodynamic mix of Ge-doped ablator mass within the hot spot, core symmetry without interpenetration mix, shell assembly, and distribution of temperature and hot spot mass. Further, the measured brightness of Ge K-shell emission and bremsstrahlung allows for the inference of burn-weighted electron temperature, hot spot mass, ρR , density, and pressure. Experimental results and a simple hot spot pressure model will be presented.

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