Abstract Submitted
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Visualizing density perturbations in the capsule shell in NIF implosions near peak velocity[1] L.A. PICKWORTH, B.A. HAMMEL, V.A. SMALYUK, A. MACPHEE, H.A. SCOTT, H.F. ROBEY, J. FIELD, M. BARRIOS, Lawrence Livermore Natl Lab, S.P. REGAN, University of Rochester — Engineering features on the capsule (surface roughness, support structures, etc.) can introduce outer surface perturbations that are ultimately detrimental to the performance of the capsule. Recent experiments have assessed minimal support structures and alternate pulse shapes using a re-entrant cone and back lighter that is perturbing to the implosion below radii of ~ 500 μ m. Emission from the hot core, after shock-stagnation and prior to peak velocity (PV), has been used as a self-backlighter, providing a means to sample one side of the capsule at smaller radii. Adding high-Z gas ($\sim$ 1% Ar) to the capsule fill in Symcaps (4He), has produced a continuum backlighter with significant increase in emission at $hv\sim$ 8 keV over nominal fills. High-resolution imaging diagnostics with photon energy selectivity form 2D images of the transmitted self-emission, above and below the K-edge of an internally doped Cu layer. We can infer from these images the growth at PV of outer surface perturbations.

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