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Modeling and diagnosing interface mix in layered ICF implosions<sup>1</sup> C.R. WEBER, L.F BERZAK HOPKINS, D.S. CLARK, S.W. HAAN, D.D. HO, N.B. MEEZAN, J.L. MILOVICH, H.F. ROBEY, V.A. SMALYUK, C.A. THOMAS, Lawrence Livermore National Laboratory — Mixing at the fuel-ablator interface of an inertial confinement fusion (ICF) implosion can arise from an unfavorable in-flight Atwood number between the cryogenic DT fuel and the ablator. High-Z dopant is typically added to the ablator to control the Atwood number, but recent high-density carbon (HDC) capsules have been shot at the National Ignition Facility (NIF) without this added dopant. Highly resolved post-shot modeling of these implosions shows that there was significant mixing of ablator material into the dense DT fuel. This mix lowers the fuel density and results in less overall compression, helping to explain the measured ratio of down scattered-to-primary neutrons. Future experimental designs will seek to improve this issue through adding dopant and changing the x-ray spectra with a different hohlraum wall material. To test these changes, we are designing an experimental platform to look at the growth of this mixing layer. This technique uses side-on radiography to measure the spatial extent of an embedded high-Z tracer layer near the interface.

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