

Abstract Submitted
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Proposed NIF Experiments to Explore Convergence Ratio and Robustness of Hot Spot Formation in DT Liquid Layer HDC Capsules¹ R. OLSON, R. LEEPER, G. GRIM, J. KLINE, R. PETERSON, LANL, L. BERZAK HOPKINS, A. HAMZA, D. HO, O. JONES, S. LEPAPE, A. MACKINNON, N. MEEZAN, H. ROBEY, LLNL — DT Liquid Layer ICF capsules allow for flexibility in hot spot convergence ratio via the adjustment of the initial cryogenic capsule temperature and, hence, DT vapor density.² High Density Carbon (HDC) is a leading candidate as an ablator material for ICF capsules,³ and a technique has been developed for lining the inner surface of a HDC shell with an ultra-low-density hydrocarbon foam that will survive wetting with liquid hydrogen.⁴ In this presentation, we propose a series of NIF experiments using liquid DT layer (wetted foam) HDC capsules to test the hypothesis that our predictive capability of hot spot formation is robust for a relatively low convergence ratio hot spot, but will become more difficult as vapor pressure is reduced and hot spot convergence ratio is increased. The proposed liquid DT layer HDC capsule “sub-scale” experiments utilize near-vacuum hohlraums with NIF laser pulse energies of about 1 MJ, but larger scale experiments are also considered.

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⁴J. Biener et al., *Nucl. Fusion* **52**, 062001 (2012).

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