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Understanding Laser-Imprint Effects on Cryogenic DT Implosions on OMEGA S.X. HU, R. C. SHAH, D. CAO, S. P. REGAN, V. N. GONCHAROV, P. B. RADHA, J. L. PEEBLES, W. THEOBALD, R. BETTI, E. M. CAMPBELL, Laboratory for Laser Energetics, University of Rochester, G. DUCHATEAU, A. CASNER, V. T. TIKHONCHUK, Centre Lasers Intenses et Applications, Universite de Bordeaux-CNRS-CEA, France — Direct measurements of the disruption caused by laser-imprint–seeded Rayleigh–Taylor instability growth to the imploding shell and hot-spot formation can provide a clear picture of how laser nonuniformities cause target performance to degrade in direct-drive implosions. Such detailed studies on warm target implosions[1,2] have previously been conducted by using the x-ray self-emission imaging technique developed at LLE. An experimental campaign has been dedicated to applying this technique to measure laserimprint effects on cryogenic DT implosions on OMEGA. The x-ray emission measurements with framing cameras provided clean images of both the ablation-front location and the lighting-up hot spot as a function of time, which have been compared with state-of-the-art *DRACO* simulations. By varying the DT shell adiabat from $\alpha = 4$ to $\alpha = 2.5$, a systematic examination of the laser-imprint effects on the DT shell integrity before stagnation was performed. Comparisons between experiments and simulations will be presented and discussed. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

[1]S. X. Hu *et al.*, Phys. Plasmas **23**, 102701 (2016).
[2]D. T. Michel *et al.*, Phys Rev. E **95**, 051202(R) (2017).

Suxing Hu
University of Rochester

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