Abstract Submitted
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Cryogenic Deuterium–Tritium Implosions on OMEGA V.N. GONCHAROV, T.C. SANGSTER, R. EPSTEIN, S.X. HU, I.V. IGUMENSHCHEV, D.H. FROULA, R.L. MCCRORY, D.D. MEYERHOFER, P.B. RADHA, W. SEKA, S. SKUPSKY, C. STOECKL, Laboratory for Laser Energetics, U. of Rochester, D.T. CASEY, J.A. FRENJE, R.D. PETRASSO, PSFC, MIT — This talk summarizes the results on improving performance and the progress in theoretical understanding of cryogenic deuterium–tritium implosions on OMEGA. As shown recently,[1] the cross-beam energy transfer (CBET) is one of the main factors limiting hydrodynamic efficiency of direct-drive implosions. To tune the CBET model used in hydro simulations, a series of warm plastic implosions was carried out on OMEGA. Based on the result of such a model, it was found that CBET contributes up to 15% to the incident energy scattering and up to 20% loss in hydro-efficiency in symmetric-drive implosions. Mitigation strategies for energy loss caused by CBET as well as recent improvements in target quality that resulted in significant improvement (by a factor of two) in target yields will be discussed. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

[1]I. V. Igumenshchev *et al.,* Phys . Plasmas **17**, 122708 (2010).

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