Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Cross-Beam Energy Transfer Mitigation in Cryogenic Implosions on OMEGA V.N. GONCHAROV, S.P. REGAN, T.C. SANGSTER, R. BETTI, T.R. BOEHLY, D.H. EDGELL, R. EPSTEIN, C.J. FORREST, D.H. FROULA, V.YU. GLEBOV, S.X. HU, I.V. IGUMENSHCHEV, J.A. MAROZAS, F.J. MARSHALL, R.L. MCCRORY, D.D. MEYERHOFER, D.T. MICHEL, J.F. MYATT, P.B. RADHA, W. SEKA, A. SHVYDKY, C. STOECKL, W. THEOBALD, B. YAAKOBI, Laboratory for Laser Energetics, U. of Rochester, M. GATU JOHNSON, PSFC, MIT — The OMEGA Laser System is used to study the physics of cryogenic implosions that are hydrodynamically equivalent to the spherical ignition designs of the National Ignition Facility. Based on these experiments, cross-beam energy transfer (CBET) has been identified as the main mechanism reducing laser coupling and hydroefficiency. To mitigate CBET, target size $R_{\rm t}$ was increased with respect to the size of the beam focal spot $R_{\rm b}$. This increases drive pressure, allowing for a thicker, more-stable target to reach ignition-relevant implosion velocities. The beam shape was optimized to minimize the nonuniformity produced when $R_{\rm b}/R_{\rm t}$ <1. This talk will summarize the latest results in direct-drive implosions with different $R_{\rm b}/R_{\rm t}$. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

V.N. Goncharov
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 20 Jul 2015 Electronic form version 1.4