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Analysis of a High-Adiabat Cryogenic Implosion on OMEGA A.R. CHRISTOPHERSON, R. BETTI, R. NORA, Fusion Science Center and Laboratory for Laser Energetics, U. of Rochester, R. EPSTEIN, F.J. MARSHALL, C.J. FORREST, C. STOECKL, J.A. DELETTREZ, P.B. RADHA, J. HOWARD, Laboratory for Laser Energetics, U. of Rochester — The performance of high-adiabat implosions $\gtrsim 10$ is marginally affected by nonuniformities because of the strong ablative stabilization. To test the validity of the one-dimensional (1-D) physics included in existing hydrocodes, a study of high-adiabat cryogenic DT implosions is carried out by comparing the results of 1-D simulations with several measured quantities. It is found that after including nonlocal transport, cross-beam energy transfer, and hot electrons, 1-D simulations reproduce most of the observables with reasonable accuracy. Since the analysis is applied to the only high-adiabat DT implosion fielded on OMEGA, these results do not fully validate the 1-D physics of current hydrocodes. However, this work shows the framework for establishing a validation capability of the 1-D physics of inertial confinement fusion implosions. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944 and the Office of Fusion Energy Sciences Number DE-FG02-04ER54786.

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