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Effect of Laser Bandwidth on High-Performance, Cryogenic Implosions JAMES KNAUER, University of Rochester - LLE, RICCARDO BETTI, University of Rochester, VARCHAS GOPALASWAMY, DHRUMIR PATEL, AARNE LEES, ALEXANDER SHVYDKY, MARK BONINO, E. MICHAEL CAMPBELL, TIMOTHY COLLINS, CHAD FORREST, VLADIMIR GLEBOV, VALERY GONCHAROV, DAVID HARDING, JOHN MAROZAS, FREDRIC MARSHALL, PATRICK MCKENTY, BAHUKUTUMBI RADHA, SEAN REGSN, T. CRAIG SANGSTER, CHRISTIAN STOECKL, DUC CAO, University of Rochester - LLE — The goal of the high-performance cryogenic implosions on the OMEGA laser is to find the largest generalized Lawson criterion[1] that is accessible with 30-kJ, direct-drive implosions ($\chi_{\mathrm{no}\alpha}$ OMEGA). $\chi_{\mathrm{no}\alpha}$ OMEGA can then be used to extrapolate to the laserdriver parameters needed for ignition. A study of implosion limitations is needed to meet the above goal. The bandwidth imposed by Smoothing by Spectral Dispersion (SSD) was varied to change the laser imprint on target implosions. Neutron yield (Y_{n}) and areal density (ρR) were used to measure the implosion performance. Y_{n} and ρR data clearly show an SSD dependence that increases as bandwidth increases then plateaus at the higher values of bandwidth. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DENA0003856.

[1]R. Betti *et al.*, Phys. Rev. Lett. **114**, 255003 (2015).

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