Abstract Submitted
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Measurement of 1-D Multi-FM SSD Smoothing Performance on OMEGA EP M. HOHENBERGER, A. SHVYDKY, J.A. MAROZAS, T.J.B. COLLINS, G. FIKSEL, T.J. KESSLER, P.W. MCKENTY, D.D. MEYERHOFER, J.D. ZUEGEL, T.C. SANGSTER, Laboratory for Laser Energetics, U. of Rochester — Polar-drive ignition on the National Ignition Facility (NIF) requires single-beam smoothing to minimize imprinting of laser nonuniformities that can negatively affect implosion performance. One-dimensional multi-FM smoothing by spectral dispersion (SSD) has been proposed to provide the required smoothing.[1] A prototype multi-FM SSD system has been integrated into the NIF-like beamline of the OMEGA EP Laser System. This talk will present recent experimental results to verify smoothing performance by measuring Rayleigh–Taylor growth rates in planar targets of laser-imprinted and pre-imposed surface modulations with and without applying multi-FM SSD. Experimental results will be compared to 2-D *DRACO* simulations using realistic, time-dependent far-field spot-intensity calculations that emulate the effect of SSD. The multi-FM effectiveness in reducing the laser imprint will be inferred and the accuracy of our multi-FM modeling will be assessed. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

[1]J. A. Marozas, J. D. Zuegel, and T. J. B. Collins, Bull. Am. Phys. Soc. **55**, 294 (2010).

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