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Laser Imprint Suppression for Spike Pulseshapes using a Thin High-Z Overcoat[1] MAX KARASIK, Plasma Physics Division, Naval Research Laboratory, Washington DC, Y. AGLITSKIY, SAIC, McLean, VA, J. OH, RSI, Lanham, MD, J.L. WEAVER, J.W. BATES, V. SERLIN, S.P. OBENSCHAIN, Plasma Physics Division, Naval Research Laboratory, Washington DC — In directly driven ICF, most of the laser imprint is expected to occur during the initial part of the laser pulse, which generates the first shocks necessary to compress the target to achieve high gain. Previous experiments where the laser pulse had a low intensity foot to generate the first shock found that a thin (< 1000Å) high-Z overcoat is effective in suppressing imprint[PoP 9, 2234 (2002)]. The overcoat initially absorbs the laser and emits soft x-rays that ablate the target, allowing a large stand-off distance between laser absorption and ablation and giving higher ablation velocity. The coating is thin so that it becomes transparent to the main part of the pulse, minimizing x-ray preheat. The present experiments aim to extend this method to spike pulseshapes used in current target designs, with a view to direct drive on the NIF. Measurements of RT-amplified areal mass non-uniformity on planar targets driven by ISI-smoothed Nike KrF laser are made by curved crystal x-ray radiography. X-ray flux from the high-Z layer is monitored using absolutely calibrated time-resolved x-ray spectrometers. Simultaneous side-on radiography allows observation of the layer dynamics as well as target trajectory. The effect on imprint as well as pre-imposed ripple growth will be presented.

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