

Abstract Submitted
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Laser Spike Prepulses and the Ablative Richtmyer-Meshkov Instability¹ A.J. SCHMITT, A. VELIKOVICH, S. ZALESK, J. BATES, Laser Plasma Branch, D. FYFE, LCP&FD, Naval Research Lab — Recent work by various authors has suggested that there are hydrodynamic advantages to using “spikes” or “pickets” prior to the driving laser pulse in ICF target interactions. These spikes can suppress laser imprint [1] and reduce the growth rate of the Rayleigh-Taylor instability of targets by tailoring the target’s adiabat (increasing the ablation velocity) [2,3]. We look at the development of hydrodynamic instability during the compression (early time) phase of the target interaction, prior to target acceleration, when the Richtmyer-Meshkov instability is typically active. We find that under certain conditions, simulations show that hydrodynamic growth of target perturbations can be enhanced by these spikes. We show the results of these simulations, and discuss the causes and conditions during which this enhanced growth can occur.

1. N. Metzler *et al.*, Phys. Plasmas **6**, 3283 (1999)
2. V. Goncharov *et al.*, Phys. Plasmas **10**, 1906 (2003)
3. K. Anderson and R. Betti, Phys. Plasmas **10**, 4448 (2003).

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