Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Exploring the Landau-Darrieus instability in High Energy Density conditions on NIF: experimental design and preparatory experiments THIBAULT GOUDAL, Centre Lasers Intenses et Applications UMR 5107, Bordeaux, France, LAURENT MASSE, SHAHAB KHAN, DAVID MARTINEZ, Lawrence Livermore National Laboratory, Livermore, USA, LUKE CEURVORST, Centre Lasers Intenses et Applications UMR 5107, Bordeaux, France, NOBUHIKO IZUMI, DAN KALANTAR, MARIUS MILLOT, VLADIMIR SMALYUK, BRUCE REMINGTON, Lawrence Livermore National Laboratory, Livermore, USA, ALEXIS CASNER, Centre Lasers Intenses et Applications UMR 5107, Bordeaux, France — Recent experimental work is presented which was designed to observe the Landau-Darrieus Instability (LDI) for the first time in the context of laser-driven ablation fronts. The most recent experiments were conducted at the National Ignition Facility (NIF) and build upon previous work conducted at OMEGA EP. To avoid stabilizing the LDI, the conduction zone length $D_c$must be smaller than the studied wavelength. This is done by reducing the drive intensity. To maximize ablation velocity and maintain adequate growth rates, low-density foams are used. Finally, to prevent the Rayleigh-Taylor instability from dominating the system while still maximizing the growth of the LDI, thick targets with long drive durations are fielded. The analysis of the OMEGA EP experiment is presented here which critically informs the subsequent design and interpretation of the recent NIF results.

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Date submitted: 30 Jun 2020 Electronic form version 1.4