

Abstract Submitted
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Assessing the Two-Plasmon Decay Threat Through Simulations and Experiments on the NIKE Laser System¹ LEE PHILLIPS, J.L. WEAVER, Naval Research Laboratory, J. OH, Research Support Instruments, A.J. SCHMITT, S. OBENSCHAIN, Naval Research Laboratory — NIKE is a KrF laser system at the Naval Research Laboratory used to explore hydrodynamic stability, equation of state, and other physics problems arising in IFE research. The comparatively short KrF wavelength is expected to raise the threshold of most parametric instabilities. We report on simulations performed using the FAST3d radiation hydrocode to design TPD experiments that have allowed us to explore the validity of simple threshold formulas and help establish the accuracy of our simulations. We have also studied proposed high-gain shock ignition designs and devised experiments that can approach the relevant scalelength-temperature regime, allowing us a potential experimental method to study the LPI threat to these designs by direct observation. Through FAST3d studies of shock-ignited and conventional direct-drive designs with KrF (248 nm) and 3rd harmonic (351nm) drivers, we examine the benefits of the shorter wavelength KrF light in reducing the LPI threat.

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