

Abstract Submitted
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Predictions and Observations of Two-Plasmon Decay on the NIKE Laser System¹ LEE PHILLIPS, Naval Research Laboratory, JAMES WEAVER, Plasma Physics Division, Naval Research Laboratory, J. OH, Research Support Instruments, A.J. SCHMITT, S. OBENSCHAIN, A. VELIKOVICH, Plasma Physics Division, 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 short wavelength and large bandwidth of the NIKE laser is predicted to raise the threshold of parametric instabilities such as two-plasmon decay (TPD). 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 demonstrate the advantages of the KrF wavelength in suppressing LPI. We consider proposed high-gain shock ignition designs and show, through analytic estimates and simulations, that we can explore the relevant scalelength-temperature regime, providing an experimental method to study the LPI threat to these targets at a small fraction of their designed input energies.

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