Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Multibeam Two-Plasmon Decay: Experimental Signatures and Diagnostic Applications W. SEKA, D.H. EDGELL, D.H. FROULA, J. KATZ, J.F. MYATT, J. ZHANG, R.W. SHORT, D.T. MICHEL, A.V. MAXIMOV, V.N. GONCHAROV, Laboratory for Laser Energetics, U. of Rochester — Images and spectra at $\omega/2$ and $3\omega/2$ along with 2-D and 3-D Zakharov simulations indicate that the two-plasmon-decay (TPD) instability operates primarily as a multibeam instability in direct-drive–implosion experiments. Simulations indicate that the instability enters the nonlinear regime within $\sim$1 ps and covers a large phase space volume within 10 ps, far beyond linear gain predictions. This largely explains the preponderance of $3\omega/2$ spectra seen in the past 40 years. The $\omega/2$ and $3\omega/2$ images and spectra indicate the localized areas on the target surface where the TPD instability operates. The $\omega/2$ spectra can be used as powerful T_e measurement at $n_c/4$ as originally proposed in 1985. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

W. Seka
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 09 Jul 2012 Electronic form version 1.4