

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Two-Plasmon Decay Driven by Multiple Obliquely Incident Laser Beams R.W. SHORT, Laboratory for Laser Energetics, U. of Rochester — Theoretical studies of the two-plasmon-decay (TPD) instability in inhomogeneous plasmas have generally considered the absolute instability of a single beam normally incident on the plasma.¹ However, experimental observations of 3/2 harmonic and hard x-ray emission on OMEGA have shown that TPD signals depend on combined rather than single-beam intensity.² Here the Fourier transform technique used to study the absolute instability in Ref. 1 is extended to the convective regime driven by multiple obliquely incident beams. The integrated gain is calculated for a plasma wave passing through the quarter-critical interaction region; a gain of $\exp(2\pi)$ is conventionally taken as the threshold for convective instability, while a divergent gain indicates the onset of absolute instability. Results will be presented for the geometry and plasma conditions relevant to OMEGA experiments. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

¹C. S. Liu and M. N. Rosenbluth, *Phys. Fluids* **19**, 967 (1976); A. Simon *et al.*, *Phys. Fluids* **26**, 3107 (1983).

²C. Stoeckl *et al.*, *Phys. Rev. Lett.* **90**, 235002 (2003).

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Date submitted: 17 Jul 2008

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