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Anisotropy and Angular Dependence of Two-Plasmon Decay Driven by Multiple Overlapping Laser Beams in Direct-Drive Geometry
R.W. SHORT, Laboratory for Laser Energetics, U. of Rochester — Experimental observations of half-harmonic and hard x-ray emission on OMEGA have shown that two-plasmon-decay (TPD) signals depend on the collective rather than the single-beam intensity.[1] Previous theoretical work has shown that if one of the plasmon wave vectors is aligned along the density gradient and the axis of symmetry of several laser beams, the beams act in concert and result in the same growth as would be obtained for a single beam at the combined intensity.[2] In this talk this analysis will be extended to plasmon wave vectors that deviate from the beam axis of symmetry or from the density gradient. The dependence of the integrated spatial growth of the instability on the angle of deviation will be determined. In a direct-drive spherical configuration this dependence determines the anisotropy of the resulting hot-electron distribution, so it is important in modeling the preheat of the core by TPD-generated hot electrons.[3] This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

[1]C. Stoeckl *et al.*, Phys. Rev. Lett. **90**, 235002 (2003).
[2]R. W. Short, Bull. Am. Phys. Soc. **53**, 245 (2008).
[3]J. A. Delettrez *et al.*, Bull. Am. Phys. Soc. **53**, 248 (2008).

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