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Convective Multibeam Two-Plasmon Decay for Spherical and Planar Irradiation Geometries R.W. SHORT, J.F. MYATT, Laboratory for Laser Energetics, U. of Rochester — There is mounting evidence that the two-plasmon-decay (TPD) instability near $n_c/4$ absorbs non-negligible amounts of the incident laser energy in direct-drive implosion experiments.[1] Some of this energy is imparted to hot electrons that can preheat the compressed core and degrade implosion efficiency, while the remainder contributes to heating the bulk-electron distribution. How much energy goes into hot electrons and how these electrons interact with the core depends on the spectrum, propagation direction, and amplitude of the plasma waves produced by TPD. To investigate these questions the dependence of TPD instability gain on the geometry of the irradiating beams is investigated. It is found that TPD depends on the collective intensity of several beams when the beams are near normal incidence,[2] but becomes essentially a single-beam process when the beams are more oblique. Consequences for spherical and planar experiments will be discussed. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

[1]W. Seka *et al.*, this conference.
[2]C. Stoeckl *et al.*, Phys. Rev. Lett. **90**, 235002 (2003).

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