

Abstract Submitted
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Effect of Multibeam Two-Plasmon–Decay Instability on Cross-Beam Energy Transfer in Plasmas A. V. MAXIMOV, D. TURNBULL, J. G. SHAW, R. K. FOLLETT, J. P. PALASTRO, Laboratory for Laser Energetics, University of Rochester — In the plasmas of direct-drive inertial confinement fusion (ICF), the region near quarter of the critical density is of particular importance for laser–plasma interactions (LPI’s). In this region the LPI instabilities of absolute two-plasmon decay (TPD) and cross-beam energy transfer (CBET) can develop together for the experimental conditions of the OMEGA Laser System. The interplay between these instabilities determines the balance between scattering and absorption of light and the generation of plasma waves that accelerate electrons into the core of the ICF target. Two-dimensional simulations of LPI including TPD and CBET in OMEGA-scale ICF plasmas have been performed with the laser-plasma simulation environment (*LPSE*).¹ *LPSE* results show that multibeam TPD can modify CBET through redistribution of laser power and through low-frequency, ion-acoustic density perturbations shared by TPD and CBET. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

¹J. F. Myatt *et al.*, Phys. Plasmas **24**, 056308 (2017).

Andrei Maximov
Laboratory for Laser Energetics, University of Rochester

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