

Abstract Submitted
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Comparing Ray-Based and Wave-Based Models of Cross-Beam Energy Transfer R.K. FOLLETT, D.H. EDGELL, J.G. SHAW, D.H. FROULA, J.F. MYATT, Laboratory for Laser Energetics, U. of Rochester — Ray-based models of cross-beam energy transfer (CBET) are used in radiation–hydrodynamics codes to calculate laser-energy deposition. The accuracy of ray-based CBET models is limited by assumptions about the polarization and phase of the interacting laser beams and by the use of a paraxial Wentzel–Kramers–Brillouin (WKB) approximation. A 3-D wave-based solver (*LPSE-CBET*) is used to study the nonlinear interaction between overlapping laser beams in underdense plasma. A ray-based CBET model¹ is compared to the wave-based model and shows good agreement in simple geometries where the assumptions of the ray-based model are satisfied. Near caustic surfaces, the assumptions of the ray-based model break down and the calculated energy transfer deviates from wave-based calculations. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

¹I. V. Igumenshchev *et al.*, Phys. Plasmas **19**, 056314 (2012).

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