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Energy Transfer Between Crossing Laser Beams in the Plasmas of Direct-Drive ICF A.V. MAXIMOV, J.F. MYATT, R.W. SHORT, I.V. IGUMENSHCHEV, D.H. EDGELL, W. SEKA, Laboratory for Laser Energetics, U. of Rochester — Nonlinear interaction between multiple crossing laser beams through low-frequency ion-acoustic waves is an important effect in direct-drive inertial confinement fusion (ICF) targets. It can lead to energy transfer between the beams and, consequently, increases the laser scattering and decreases the laser absorption.[1] The non-paraxial model of coupled Maxwell's and hydrodynamic equations[2] has been used to study the nonlinear propagation of crossing laser beams in the plasma corona for different angles of incidence. This model is used to study the seeding of crossed-beam energy transfer by turning laser beams and by the transmitted part of opposing laser beams. The comparison between the results of the non-paraxial model and the results of the ray-based model used in large-scale simulations[1] suggests modifications to large-scale modeling of the plasma corona in direct-drive ICF.
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[1]I. V. Igumenshchev *et al.*, Phys. Plasmas **17**, 122708 (2010).
[2]A. V. Maximov *et al.*, Phys. Plasmas **11**, 2994 (2004).

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