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Scattering of Multiple Crossing Laser Beams in Direct-Drive ICF Plasmas A.V. MAXIMOV, J.F. MYATT, R.W. SHORT, I.V. IGUMENSHCHEV, D.H. EDGELL, W. SEKA, Laboratory for Laser Energetics, U. of Rochester — In direct-drive inertial confinement fusion (ICF), the nonlinear propagation of multiple crossing laser beams determines the balance between absorption and scattering of laser power. Cross-beam energy transfer (CBET) has been implemented in large-scale hydrodynamic simulations[1] based on the ray-interaction model and shown to be important for the coupling of laser energy to the target. The full laser–plasma interaction model[2] applied to the scattering of multiple laser beams allowed us to consider the effects of laser speckle intensity distribution and the angular spreading and frequency broadening. The generation of common ion-acoustic waves by multiple laser beams and the light scattering off them has been shown to influence CBET. Modifications to the CBET hydrodynamic model for direct-drive ICF are 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]I. V. Igumenshchev *et al.*, Phys. Plasmas **19**, 056314 (2012).
[2]A. V. Maximov *et al.*, Phys. Plasmas **11**, 2994 (2004).

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