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Nonlocal transport in the hydrodynamics of laser plasma interactions BRENDAN C. LYONS, Princeton University, USA, STEFAN HÜLLER, CPHT, CNRS, Ecole Polytechnique, France — For the modeling of laser plasma interactions in hot plasmas, the assumption of an isothermal plasma can be justified as long as the thermal transport rapidly diffuses the absorbed laser energy. For electron temperatures below around 500eV, local heating may be non-negligible, requiring the solving of the energy equation together with the hydrodynamic equations for continuity and momentum. Furthermore, nonlocal transport effects have to be considered when the electron mean free path is comparable to the size of the laser hot spots which give rise to local heating. In this study, electron heat conduction and laser absorption are included in a Eulerian hydrodynamic scheme. The corrections to the transport and coupling coefficients are also taken into account following models which consider laser-induced anisotropy and nonlocal transport. Refs.: A. Brantov, V. Bychenkov et al. Phys. Plasmas 5, 2742 (1998); Phys. Plasmas 6, 3002 (1999); Phys. Plasmas 7, 1511 (2000), A. Bendib et al., Phys. Plasmas 12(3), 032308 (2005).

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