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Benchmark of nonlocal transport models against Vlasov-Fokker-Planck codes in situations of immediate relevance to ICF DARIO DEL SORBO, JONATHAN P. BRODRICK, MARTIN P. READ, University of York, MILAN HOLEC, CeLIA- Univ. Bordeaux, CEA, CNRS, ARNAUD DEBAYLE, PASCAL LOISEAU, CEA, ROBERT J. KINGHAM, Imperial College, PHILIPPE NICOLAI, JEAN-LUC FEUGEAS, VLADIMIR T. TIKHONCHUK, CeLIA- Univ. Bordeaux, CEA, CNRS, CHRISTOPHER P. RIDGERS, University of York — Hydrodynamics simulations relevant to inertial confinement fusion require a detailed description of energy transport, in particular by electrons. This may be nonlocal if, as is commonly the case, the plasma is not in local thermodynamic equilibrium (i.e. if the electron mean free path is long compared to the temperature scale-length). In this case, a kinetic model of electron thermal transport is required. Some of the most successful approaches to nonlocal transport (SNB [1] & M1 [2] models) are systematically compared [3] against Vlasov-Foker-Planck & Particle-in-Cell codes, extending benchmarking beyond the 1D unmagnetized case and studying situations of immediate relevance to ICF. [1] Schurtz et al., Phys. Plasmas, 7 (10) 2000. [2] Del Sorbo et al., Phys. Plasmas, 22 (8) 2015. [3] Brodrick et al., Phys. Plasmas, arXiv preprint arXiv:1706.04153 (2017).

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