

Abstract Submitted
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Application of nonlocal transport model to experiment and implosion calculations in 1 and 2D DENIS COLOMBANT, Naval Research Laboratory, WALLACE MANHEIMER¹, RSI Corporation, Lanham, Md, ANDREW SCHMITT, Naval Research Laboratory — Our velocity-dependent Krook (VDK) model [1] has been applied to an experiment performed at the U. of Rochester [2] first. For the experimental comparison, we use our 2D version. This model involves applying time-split VDK in both the laser direction and that one perpendicular to it. We compare our model to the experimental results of acceleration of a thin foil, and also analyze the dependencies of critical information like temperature and density gradient scale-lengths on the various transport models. Although a judiciously chosen flux-limiter can reproduce a single observed variable, it cannot simultaneously match other variables. In particular, preheating effects are totally missed by such formulations. Implosion calculations where our VDK model is applied show the need to retune the laser pulse when nonlocal transport is included in order to ensure successful shock timing. Impact on target performance and stability parameters will be shown and discussed.

[1] D. Colombant and W. Manheimer, Phys. Plasmas, 17, 112706, 2010

[2] S.X. Hu, V.A. Smalyuk, V. Goncharov et al, Phys. Rev. Lett., 101, 055002, 2008

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