Abstract Submitted
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Tests for Krook model for nonlocal heat transport in laser produced plasmas[1] D. COLOMBANT, W. MANHEIMER, M. KESKINEN, Plasma Physics Division, Naval Research Laboratory, Washington, DC, V. GONCHAROV, Laboratory for Laser Energetics, University of Rochester, Rochester, NY — A Krook model has recently been proposed [1] for solving the problem of electron energy transport in laser produced plasmas. In this work, we report on comparisons of this model with 1) a more complete Fokker-Planck model and 2) an experiment performed at NRL [2]. A simple test problem solved with a Fokker-Planck code was first considered by Matte and Virmont [3]. It consists of a pure heat transport problem in a uniform plasma slab between two thermostatic walls at different temperatures. The normalized slab length (L/λ where λ is the average electron mean free path) varies from order 1 to a few hundreds. The comparison with experiment involves the back side temperature measurement behind a 58 μm plastic foil after the passage of a laser-produced shock wave. Results from these two comparisons will be presented and outline for further work will be discussed.
[1] W.Manheimer, D.Colombant and V.Goncharov, submitted to Phys. of Plasmas
[2] E.McLean et al., Optics Comm. 166, 141 (1999)
[3] J.P.Matte and J. Virmont, Phys. Rev. Letters 49, 1936 (1982)

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