

Abstract Submitted
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Suprathermal pressure in low mass short-pulse laser irradiated targets¹ M. TABAK, Lawrence Livermore National Laboratory — Suprathermal pressure can be a significant parasitic loss in low mass targets illuminated by short-pulse, ultra-high intensity lasers. Recent experiments have used low mass targets as: 1) efficient sources of K_{α} radiation for radiography applications as well as 2) clean measures of laser to suprathermal electron coupling efficiency because electron transport should be less important when the hot electrons fill the target. Recent experiments have shown apparent coupling efficiency at variance with previous experiments and significantly reduced for the thinnest targets. We use the multigroup electron diffusion package in Lasnex to model these experiments. We first model the two-temperature expansion of a collisionless plasma and obtain good agreement with recent calculations of Mora. We then introduce a simple post-processor model for K_{α} radiation into collisional, radiative calculations. A significant fraction of the incident energy is directly coupled to the hydrodynamic expansion of the slabs. This accounts for some of the discrepancies with earlier experiments, but still leaves some open questions.

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