

Abstract Submitted
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Self similar nonlocal electron heat flow JEAN-PIERRE MATTE, INRS-EMT, Un. du Quebec — The well known self similar heat diffusion solutions of Zel'dovich and Raizer [1], for a heat wave advancing from a boundary at a fixed temperature or a fixed heat flux do not keep the ratio R of the scale length to the mean free path constant. Instead, R increases and the solution becomes increasingly valid because Spitzer-Harm [2] heat flow is increasingly applicable. A self similar solution exists which keeps R constant, if one assumes that the boundary heat flux increases in time. Similarly, for the problem of a uniform density plasma heated by a finite width laser beam, a self similar solution keeping R constant can be obtained by assuming that the beam intensity and width increase in time. Such solutions will be studied with the electron kinetic code FPI [3], and compared to simulations with more usual laser characteristics.

[1] Ya. B. Zel'dovich and Yu. P. Raizer, "Physics of Shock Waves . . .", Academic Press, New York, 1967.

[2] L. Spitzer and R. Harm, Phys. Rev. **89**, 977 (1953).

[3] J.-P. Matte *et al.*, Phys. Rev. Lett. **53**, 1461 (1984) ; *ibid* **49**, 1936 (1982).

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