Abstract Submitted
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A Model for Radiative Heating of a High-Z Pusher[1] E.S. DODD, K. MOLVIG, B.J. ALBRIGHT, C.K. HUANG, LANL — Current development of Inertial Confinement Fusion (ICF) capsules is moving towards surrounding the fuel with pushers made from High-Z materials. Any radiation emitted by the hot fuel can be absorbed and re-radiated to reduce cooling. While radiation-hydrodynamics codes can model this physics, just performing calculations is not the same as developing a physical picture. For this end, we have developed a set of differential equations from the Hammer and Rosen solution [1] to a Marshak wave [2]. We will present the derivation of the differential equations equivalent to the solutions of Ref. 1, and a set of power-law analytic solutions. We will also discussion numerical implementation of differential equations into a model for burn in ICF capsules [3]. [1] J. H. Hammer and M. D. Rosen, Phys. Plasmas 10, 1829 (2003). [2] R. E. Marshak, Phys. Fluids 1, 24 (1958). [3] C. K. Huang, K. Molvig, B. J. Albright, E. S. Dodd, E. L. Vold, G. Kagan, and N. M. Hoffman, Phys. Plasmas 24, 022704 (2017). LA-UR-19-26058

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