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Simultaneous Investigation of Hot-electron Transport and Preplasma Formation in Cone-wire Targets H. FRIESEN, H.F. TIEDJE, S. SINGH, Y.Y. TSUI, R. FEDOSEJEVS, University of Alberta, T. MA, D. HEY, Y. PING, C.D. CHEN, A. MACPHEE, M.H. KEY, H.S. MCLEAN, P. PATEL, A. MACKINNON, Lawrence Livermore National Laboratory, J. PASLEY, University of York, K.U. AKLI, R. STEPHENS, General Atomics, A. LINK, D.W. SCHUMACHER, R.R. FREEMAN, L.D. VAN WOERKOM, Ohio State University, B. WESTOVER, M.S. WEI, F.N. BEG, University of California, San Diego — The generation and transport of MeV electrons is essential to the realization of Fast Ignition fusion. An important factor in determining the hot electron source is the preplasma distribution that is inevitably formed even in high-contrast short-pulse laser systems. A larger preplasma moves the critical surface further from the region where heating is required, and has a significant effect on the electron source and transport. In this paper we present analysis of results where bremstrahhlung emission from the preplasma region was imaged simultaneously with k-alpha emission from a copper tracer in cone-wire targets using a grazing-incidence x-Kirkpatrick-Baez x-ray microscope. The predicted scalings from simulations and theory will be compared with experimental results to determine unique characteristics of how the hot electron source and transport are affected by the presence of the wire as well as preplasma.

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