Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Fast Electron Heating in Cone-wire Targets J.A. KING, University of California, San Diego, California 92093-0417, M.H. KEY, K.U. AKLI, S. GLENZER, S. HANSEN, S.P. HATCHETT, D. HEY, J.A. KOCH, A.J. MACKINNON, P.K. PATEL, R. TOWN, S. WILKS, Lawrence Livermore National Laboratory, Livermore, California 94550, R.R. FREEMAN, College of Mathematical and Physical Sciences, Ohio State University, Columbus, Ohio 43210, G. GREGORI, K.L. LANCASTER, P.A. NORREYS, Rutherford Appleton Laboratory, Chilton, Oxon, OX11 OQX, United Kingdom, R. STEPHENS, General Atomics, San Diego, California 92186, B. ZHANG, Department of Applied Science, University of California Davis, Davis, California 95616 — We present results of fast electron heating of 10μm diameter, 1mm Cu wires. In the experiments, an 80J, 1ps, 1053nm pulse is focused into a Au cone, generating energetic electrons which heat the wire. 68eV XUV images obtained with a multilayer spherical mirror are compared with simulations to indicate peak wire heating of $\sim$350eV near the cone tip falling with a scalelength of $\sim$100μm. Kα linewidth measurements were compared to simulations of Kα broadening to estimate average wire temperatures of $\sim$160eV. LSP simulations predict a cone tip temperature of $\sim$350eV and a 120μm scalelength of heating along the wire. This work is consistent with an ohmic limiting of the electron penetration to the observed 100μm scalelength.

J.A. King
University of California, San Diego, California 92093-0417

Date submitted: 25 Jul 2006 Electronic form version 1.4