

K_{α} Fluorescence Measurement of Relativistic Electron Transport in the Context of Fast Ignition

R.B. Stephens,^{*} Y. Aglitskiy,[§] F. Amiranoff,^{||} C. Andersen,[‡] D. Batani,^{**} S.D. Baton,^{||}
T. Cowan,^{*} R.R. Freeman,[‡] T. Hall,^{††} S.P. Hatchett,[†] J.M. Hill,[‡] M.H. Key,[†] J.A. King,[‡]
J.A. Koch,[†] M. Koenig,^{||} A.J. MacKinnon,[†] K.L. Lancaster,^{‡‡} E. Martinolli,^{||} P. Norreys,^{‡‡}
E. Perelli-Cippo,^{**} M. Rabec Le Gloahec,[¶] C. Rousseaux,[¶] J.J. Santos,^{||} F. Scianitti,^{**}
R.A. Snavely[‡]

^{*}General Atomics, P.O. Box 85608, San Diego, California 92186-5608

[†]Lawrence Livermore National Laboratory, 7000 East Avenue, Livermore, California
94550-9234

[‡]Department of Applied Science, University of California Davis, 3001 Engineering III, 1 Shields
Avenue, Davis, California 95616-8254

[§]Science Applications International Corporation, 1710 SAIC Drive, McLean, Virginia 22102

^{||}Laboratoire pour l'Utilisation des Lasers Intenses (LULI), Ecole Polytechnique, CNRS,
Route de Saclay, 91128 Palaiseau Cedex, France

[¶]Commissariat à l'énergie Atomique, BP 12 - 91680 Bruyères-le-Châtel, France

^{**}Università degli Studi di Milano-Bicocca, Dipartimento di Fisica "G. Occhialini",
Piazza della Scienza, 3, I-20126 Milano, Italy

^{††}Department of Physics, University of Essex, Wivenhoe Park, Colchester CO4 3SQ, United
Kingdom

^{‡‡}CCLRC Central Laser Facility, Rutherford Appleton Laboratory, Chilton, Didcot,
Oxfordshire OX11 0QX, United Kingdom

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Abstract. Electron transport within solid targets, irradiated by a high-intensity short-pulse laser, has been measured by imaging K_{α} radiation from high-Z layers (Cu, Ti) buried in low-Z (CH, Al) foils. Although the laser spot is $\sim 10 \mu\text{m}$ (FWHM), the electron beam spreads to $\geq 70 \mu\text{m}$ FWHM within $< 20 \mu\text{m}$ of penetration into an Al target then, at depths $> 100 \mu\text{m}$, diverges with a 40° spreading angle. Monte Carlo and analytic models are compared to our data.