

Karl Michael Krushelnick

Education :

B.Sc. (Honors) – Physics	University of Western Ontario – London, Canada	1987
M.A. – Astrophysical Sciences	Princeton University – Princeton NJ	1989
Ph.D. – Astrophysical Sciences (Plasma Physics)	Princeton University – Princeton NJ	1994

Awards :

Excellence in Research Award, University of Michigan College of Engineering, 2013.
Outstanding Faculty Award, Department of Nuclear Engineering, University of Michigan, 2010.
Professor Mitsuyuki Abe Visiting Chair, Japan Atomic Energy Agency, Kyoto Japan, 2008-2011.
Charles V. Boys medal and prize for experimental physics – UK Institute of Physics, 2006.
Fellow: American Physical Society, Institute of Physics, Optical Society of America.
Berman research publication award, US Naval Research Laboratory, 1997.
National Science and Engineering Research Council of Canada Postgraduate Scholarship,
Princeton University, 9/88 – 8/91.
Raymond Compton Dearle Gold Medal in Physics (highest GPA), University of Western Ontario, 1987.
Ph.D. student Awards:
E. L. Clark – winner of UK/Ireland Culham thesis prize in plasma physics, 2002.
B. Walton - winner of UK/Ireland Culham thesis prize in plasma physics 2005.
S. Mangles – winner of UK/Ireland Culham thesis prize in plasma physics 2006.
Also winner of EPS thesis prize in plasma physics 2006, and John Dawson thesis prize 2007.
P. Nilson - winner of UK/Ireland Culham thesis prize in plasma physics 2007.
L. Willingale - winner of UK/Ireland Culham thesis prize in plasma physics 2008.
Also winner of EPS thesis prize in plasma physics 2008, and John Dawson thesis prize 2009.
F. Dollar – winner of John Dawson thesis prize 2012.

Employment :

Professor – Department of Nuclear Engineering and Radiological Sciences U. of Michigan (1/9/2006 – present),
Professor – Physics, University of Michigan, Ann Arbor MI, USA (1/9/2007 - present)
Professor – Electrical Engineering and Computer Science, U. of Michigan, Ann Arbor MI, USA (1/9/2007 - present)
Marie Curie Fellow, Laboratoire d'Optique Appliquée, Ecole Polytechnique, France (2012-2013)
Visiting Professor - Department of Physics, Imperial College London UK, (1/9/2006 - present)
Professor – Department of Physics, Imperial College London UK, (1/9/2003 –31/8/2006)
Reader – Department of Physics, Imperial College London UK, (1/9/2002 –31/8/2003)
Senior Lecturer – Department of Physics, Imperial College London UK, (1/9/2001 –31/8/2002)
Lecturer – Department of Physics, Imperial College London UK, (19/8/1997 –31/8/2001)
Postdoctoral Research, Cornell University /US Naval Research Lab (1/9/1993 – 31/7/1997)

Administrative :

Director Center for Ultrafast Optical Science (CUOS) U. of Michigan (2011 – present)
Head of Plasma Physics Group, Dept. of Physics, Imperial College London 2003- 2006.
EPSRC physics prioritisation panels, September 2000/ July 2003/ July 2005.
Secretary/treasurer, American Physical Society Division of Plasma Physics 2011-2013.
Program committee member APS/Plasma Physics conference, 2011-2013.
U.K. Institute of Physics plasma physics group board member 2000 – 2003.
Member: Editorial Board of *Plasma Physics and Controlled Fusion* (2002 – 2006)
Member: International Advisory Board of *Plasma Physics and Controlled Fusion* (2006 – 2014)
Brookhaven National Lab, External Advisory Panel, Accelerator Science 2009-2014.
Scheduling committee member, Laser MegaJoule, CEA (Commissariat à l'énergie atomique), Bordeaux, France (2014- present)
DOE High Energy Physics Review Panel Member 2008, 2014.
ARPA-E Review Panel member, 2015.
Review Panel member, Helmholtz Institute Jena, Germany 2009.
Scheduling committee member, Omega Laser Facility, LLE, U. of Rochester 2009-2012.
Program committee, Laser accelerator conference, Kardamylli Greece, 2009
Program committee/workshop organizer Advanced Accelerator Concepts Conference, Santa Cruz CA 2008

Program committee, Workshop on Laser-Beam Interactions, Oxford, UK July 2003.
Program committee, Fast ignition of fusion targets workshop, Tarragona Spain 2005
Local organising committee, EPS Plasma physics meeting, London UK, June 2004.
Technical program committee, IFSA conference 2003, 2005.
Program sub-committee member and co-chair (high field physics) CLEO/QELS 2005,2006,2007
Selection Committee for APS Excellence in Plasma Physics Research Award (2004-2005).
Management committee member: Astra Gemini upgrade project (Rutherford Appleton Lab).
CCLRC high power laser facility access panel member (2002- 2006).
Referee: Science, Nature, Nature Physics, Physical Review Letters, Imperial College Press, Princeton University Press, Optics Letters, Applied Physics Letters etc.

Research interests :

High intensity/ short pulse laser system development, nonlinear optics, inertial confinement fusion, laser plasma interactions, high field physics, x-ray laser development and applications.

Invited talks:

More than 50 including APS/DPP (including plenary review talk), APS/April meeting, OSA, CLEO, EPS/DPP (including plenary)

Research Funding: National Science Foundation, US Department of Energy, Defence Threat Reduction Agency (DoD), Department of Homeland Security, Naval Research Laboratory/ONR, ARO, AFOSR, DARPA, Lawrence Livermore National Laboratory

Publications in refereed scientific journals (not including conference proceedings):

These include 11 publications in *Nature Journals*, 2 in *Science*, ~ 55 publications in *Physical Review Letters*.
h index is ~ 58 and total number of citations is ~ 14000 (Google Scholar)

(222) L. Willingale, S. R. Nagel, A. G. R. Thomas, C. Bellei, R. J. Clarke, A. E. Dangor, R. Heathcote, M. C. Kaluza, C. Kamperidis, S. Kneip, **K. Krushelnick**, N. Lopes, S. P. D. Mangles, W. Nazarov, P. M. Nilson and Z. Najmudin. "Characterization of laser-driven proton beams from near-critical density targets using copper activation" *Journal of Plasma Physics* **81**, 365810102 (2015).

(221) Zhaohan He, Bixue Hou, Vivien Lebailly, John Nees, **K. Krushelnick**, and Alexander Thomas, "Coherent control of plasma dynamics", (accepted for publication *Nature Communications*, 2015)

(220) G. Sarri Gianluca Sarri, Kristjan Poder, Jason Cole, Will Schumaker, Antonino Di Piazza, Brian Reville, Domenico Doria, Leonida Gizzi, Gabriele Grittani, Christoph Keitel, **K. Krushelnick**, Stephan Kuschel, Stuart Mangles, Zulfikar Najmudin, Nitin Shukla, Luis Silva, Dan Symes, Alexander Thomas, Mike Vargas, Jorge Vieira, M Zepf, and Thomas Dzelzainis Generation of neutral and high-density electron-positron pair plasmas in the laboratory (accepted for publication *Nature Communications*, 2015)

(219) Zhaohan He, Bixue Hou, Gan Gao, Vivien Lebailly, John A. Nees, Roy Clarke, **Karl Krushelnick**, and Alexander Thomas "Coherent control of plasma dynamics by feedback-optimized wavefront manipulation (accepted for publication *Physics of Plasmas* 2015) (invited paper at APS-DPP 2014)

(218) Eric Welch, Peng Zhang, Franklin Dollar, Zhaohan He, **Karl Krushelnick**, and Alexander Thomas, "Time Dependent Doppler Shifts in High-Order Harmonic Generation in Intense Laser Interactions with Solid Density Plasma and Frequency Chirped Pulses." (accepted for publication *Physics of Plasmas* 2015).

(217) T. Matsuoka, C. McGuffey, P. G. Cummings, S. S. Bulanov, V. Chvykov, F. Dollar, Y. Horovitz, G. Kalintchenko, **K. Krushelnick**, P. Rousseau, A. G. R. Thomas, V. Yanovsky, and A. Maksimchuk "Control of Transverse Electron Motion and Electron Injection in Laser Wakefield Accelerators" *Plasma Physics and Controlled Fusion* **56**, 084009 (2014).

(216) Z. H. He, J. A. Nees, B. Hou, **K. Krushelnick**, A. G. R. Thomas "Ionization Induced Self Compression of Tightly Focused Femtosecond Laser Pulses" *Physical Review Letters* **113**, 263904 (2014)

(215) V. Chvykov, J. Nees, **K. Krushelnick**, "Transverse amplified spontaneous emission: The limiting factor for output energy of ultra-high power lasers", *Optics Communications* **312**, 216 (2014).

(214) Michael Vargas, William Schumaker, Z. H. He, Zhen Zhao, Keegan Behm, Vladimir Chvykov, Bixue Hou, **Karl Krushelnick**, Anatoly Maksimchuk, Victor Yanovsky, Alexander Thomas, "Improvements to laser wakefield accelerated electron beam stability, divergence, and energy spread using three dimensional printed two-stage gas cell targets *Applied Physics Letters* **104**, 174103 (2014).

(213) G. Sarri, D. J. Corvan, W. Schumaker, J. M. Cole, A. Di Piazza, H. Ahmed, C. Harvey, C. H. Keitel, **K. Krushelnick**, S. P. D. Mangles, Z. Najmudin, D. Symes, A. G. R. Thomas, M. Yeung, Z. Zhao, "Ultrahigh Brilliance Multi-MeV gamma-Ray Beams from Nonlinear Relativistic Thomson Scattering", *Physical Review*

Letters **113**, 224801 (2014).

- (212) I. A. Andriyash, R. Lehe, A. Lifschitz, C. Thaury, J. M. Rax, **K. Krushelnick**, V. Malka, “An ultracompact X-ray source based on a laser-plasma undulator” *Nature Communications* **5**, 4736 (2014)
- (211) Z. H. He, J. A. Nees, J. A. Nees, B. Hou, **K. Krushelnick**, A. G. R. Thomas, “Enhancement of plasma wakefield generation and self-compression of femtosecond laser pulses by ionization gradients”, *Plasma Physics and Controlled Fusion* **56**, 084010 (2014)
- (210) W. Schumaker, G. Sarri, M. Vargas, Z. Zhao, K. Behm, V. Chvykov, B. Dromey, B. Hou, A. Maksimchuk, J. Nees, V. Yanovsky, M. Zepf, A. G. R. Thomas, **K. Krushelnick**, “Measurements of high-energy radiation generation from laser-wakefield accelerated electron beams” *Physics of Plasmas* **21** 056704 (2014).
- (209) C. Zulick, B. Hou, F. Dollar, A. Maksimchuk, J. Nees, A. G. R. Thomas, T. Zhao, and **K. Krushelnick** “High resolution bremsstrahlung and fast electron characterization in ultrafast intense laser-solid interactions” *New Journal of Physics* **15**, 123038 (2013).
- (208) F. Dollar, P. Cummings, V. Chvykov, L. Willingale, M. Vargas, V. Yanovsky, C. Zulick, A. Maksimchuk, A. G. R. Thomas, and **K. Krushelnick** “Scaling high-order harmonic generation from laser-solid interactions to ultra-high intensity” *Physical Review Letters*, **110** 175002 (2013).
- (207) G. Sarri, W. Schumaker, B. Dromey, M. Vargas, A. Di Piazza, M. Dieckmann, A. G. R. Thomas, M. Zepf, and **K. Krushelnick** “A table-top laser-based source of short, collimated ultra-relativistic positron beams” *Physical Review Letters*, **110** 255002 (2013).
- (206) F. Dollar, S. A. Reed, T. Matsuoka, S. S. Bulanov, V. Chvykov, G. Kalintchenko, C. McGuffey, P. Rousseau, A. G. R. Thomas, L. Willingale, V. Yanovsky, D. W. Litzenberg, **K. Krushelnick**, A. Maksimchuk, “High-intensity laser-driven proton acceleration enhancement from hydrogen containing ultrathin targets”, *Applied Physics Letters* **103**, 14117 (2013)
- (205) A. Morace, C. Bellei, T. Bartal, L. Willingale, J. Kim, A. Maksimchuk, **K. Krushelnick**, M. S. Wei, P. K. Patel, D. Batani, N. Piovella, R. Stephens and F. N. Beg “Improved Laser-to-proton conversion efficiency in isolated reduced mass targets” *Applied Physics Letters*, **103**, 054102 (2013).
- (204) A. Maksimchuk, A. Raymond, F. Yu, G. M. Petrov, F. Dollar, L. Willingale, C. Zulick, J. Davis, and **K. Krushelnick**, “Dominant deuteron acceleration with a high-intensity laser for isotope production and neutron generation”, *Applied Physics Letters* **102**, 191117 (2013) .
- (203) G. Sarri, W. Schumaker, A. Di Piazza, K. Poder, J. M. Cole, M. Vargas, D. Doria, S. Kushel, B. Dromey, G. Grittani, L. Gizzi, M. E. Dieckmann, A. Green, V. Chvykov, A. Maksimchuk, V. Yanovsky, Z. H. He, B. X. Hou, J. A. Nees, S. Kar, Z. Najmudin, A. G. R. Thomas, C. H. Keitel, **K. Krushelnick**, M. Zepf, “Laser-driven generation of collimated ultra-relativistic positron beams”, *Plasma Physics and Controlled Fusion* **55**, 124017 (2013).
- (202) Z. H. He, B. Hou, J. A. Nees, J. H. Easter, J. Faure, **K. Krushelnick**, A. G. R. Thomas, “High repetition-rate wakefield electron source generated by few-millijoule, 30 fs laser pulses on a density downramp” *New Journal of Physics* **15**, 053016 (2013).
- (201) L. Willingale, A. G. R. Thomas, A. Maksimchuk, A. Morace, T. Bartal, J. Kim, R. B. Stephens, M. S. Wei, F. N. Beg, **K. Krushelnick**, “Investigation of relativistic intensity laser generated hot electron dynamics via copper K-alpha imaging and proton acceleration”, *Physics of Plasmas* **20**, 123112 (2013).
- (200) F. Dollar, C. Zulick, T. Matsuoka, C. McGuffey, S. S. Bulanov, V. Chvykov, J. Davis, G. Kalinchenko, G. M. Petrov, L. Willingale, V. Yanovsky, A. Maksimchuk, A. G. R. Thomas, **K. Krushelnick**, “High contrast ion acceleration at intensities exceeding 10^{21} Wcm⁻²” *Physics of Plasmas* **20** 056703 (2013).
- (199) V. P. Yanovsky and **K. Krushelnick** “Influence of amplified spontaneous emission on gain lifetime in high-aperture Ti: sapphire amplifiers” *Applied Optics* **52**, 2329 (2013).
- (198) A. Brantov, V. Y. Bychenkov, D. V. Romanov, F. Dollar, A. Maksimchuk, **K. Krushelnick**, “High-Intensity Laser Triggered Proton Acceleration from Ultrathin Foils” *Contributions to Plasma Physics* **53**, 161 (2013).
- (197) C. Zulick, F. Dollar, V. Chvykov, J. Davis, G. Kalinchenko, A. Maksimchuk, G. M. Petrov, A. G. R. Thomas, A. Raymond, L. Willingale, V. Yanovsky, and **K. Krushelnick**, “Energetic Neutron Beams Generated from Femtosecond Laser Plasma Interactions” *Applied Physics Letters* **102**, 124101 (2013)
- (196) Z. H. He, A. G. R. Thomas, B. Beaurepaire, J. A. Nees, B. Hou, V. Malka, **K. Krushelnick**, J. Faure, “Electron diffraction using ultrafast electron bunches from a laser-wakefield accelerator at kHz repetition rate” *Applied Physics Letters* **102**, 064104 (2013).
- (195) J. H. Easter, J. A. Nees, B. Hou, A. Mordovanakis, G. Mourou, A. G. R. Thomas and **K. Krushelnick**, “Angular emission and polarization dependence of harmonics from laser - solid interactions” *New Journal of Physics* **15**, 025035 (2013).

- (194) B. Walton, S. P. D. Mangles, Z. Najmudin, A. E. Dangor, **K. Krushelnick**, A. G. R. Thomas, S. Fritzler, F. Burgy, J.-P. Chamberet, J.-F. Chemin, M. Pittman, J.-P. Rousseau, V. Malka, “Measurements of magnetic field generation at ionization fronts in high intensity laser produced plasmas” *New Journal of Physics* **15**, 025034 (2013).
- (193) L. Willingale, A. G. R. Thomas, P. M. Nilson, H. Chen, J. Cobble, R. S. Craxton, A. Maksimchuk, P. A. Norreys, T. C. Sangster, R. H. H. Scott, C. Stoeckl, C. Zulick, **K. Krushelnick** “Surface waves and electron acceleration from high-power, kilojoule-class laser interactions with underdense plasma” *New Journal of Physics* **15**, 025023 (2013).
- (192) W. Schumaker, N. Nakanii, C. McGuffey, C. Zulick, V. Chvykov, F. Dollar, H. Habara, G. Kalintchenko, A. Maksimchuk, K. A. Tanaka, A. G. R. Thomas, V. Yanovsky, and **K. Krushelnick** “Ultrafast Electron Radiography of Magnetic Fields in High-Intensity Laser-Solid Interactions” *Physical Review Letters* **110**, 015003 (2013).
- (191) C. McGuffey, T. Matsuoka, S. Kneip, W. Schumaker, F. Dollar, C. Zulick, V. Chvykov, G. Kalintchenko, V. Yanovsky, A. Maksimchuk, A. G. R. Thomas, K. Krushelnick, Z. Najmudin, “Experimental laser wakefield acceleration scalings exceeding 100 TW” *Physics of Plasmas* **19**, 063113 (2012).
- (190) C. Kamperidis, C. Bellei, N. Bourgeois, M.C. Kaluza, **K. Krushelnick**, S. P. D. Mangles, J. R. Marques, S. R. Nagel, Z. Najmudin, “Self-modulated wakefield acceleration in a centimetre self-guiding channel”, *Journal of Plasma Physics* **78**, 433 (2012).
- (189) V Chvykov, **K Krushelnick**, “Large aperture multi-pass amplifiers for high peak power lasers” *Optics Communications* **285**, 2134 (2012).
- (188) S Kneip, C McGuffey, JL Martins, MS Bloom, V Chvykov, F Dollar, R Fonseca, S Jolly, G Kalintchenko, **K Krushelnick**, A Maksimchuk, SPD Mangles, Z Najmudin, CAJ Palmer, KT Phuoc, W Schumaker, LO Silva, J Vieira, V Yanovsky, AGR Thomas, “Characterization of transverse beam emittance of electrons from a laser-plasma wakefield accelerator in the bubble regime using betatron x-ray radiation” *Physical Review Special Topics – Accelerators and Beams* **15**, 021302 (2012).
- (187) Bixue Hou, Zhaohan He, John Nees, J. Easter, **K. Krushelnick**, “Compressor optimization with compressor-based multiphoton intrapulse interference phase scan (MIIPS)”, *Optics Letters* **37**, 1385 (2012).
- (186) F. Dollar, C. Zulick, A. G. R. Thomas, V. Chvykov, J. Davis, G. Kalinchenko, T. Matsuoka, C. McGuffey, G. M. Petrov, L. Willingale, V. Yanovsky, A. Maksimchuk, and **K. Krushelnick** “Finite spot effects on radiation pressure acceleration from high-contrast laser interactions with thin foils”, *Physical Review Letters* **108**, 175005 (2012).
- (185) Spencer Jolly, Zhaohan He, William Schumaker, Christopher McGuffey, **Karl Krushelnick**, and Alexander Thomas, “Stereolithography based method of creating custom gas density profile targets for high intensity laser-plasma experiments” *Review of Scientific Instruments* **83**, 073503 (2012)
- (184) L. Willingale, AGR Thomas, PM Nilson, MC Kaluza, S Bandyopadhyay, AE Dangor, RG Evans, P Fernandes, MG Haines, C Kamperidis, RJ Kingham, S Minardi, M Notley, CP Ridgers, W Rozmus, M Sherlock, M Tatarakis, MS Wei, Z Najmudin, **K Krushelnick**, “Proton probe measurement of fast advection of magnetic fields by hot electrons” *Plasma Physics and Controlled Fusion* **53**, 124026 (2011).
- (183) L Willingale, PM Nilson, AGR Thomas, J Cobble, RS Craxton, A Maksimchuk, PA Norreys, TC Sangster, RHH Scott, C Stoeckl, C Zulick, **K Krushelnick**, “Proton Probe Imaging of Fields Within a Laser-Generated Plasma Channel” *IEEE Transactions on Plasma Science* **39**, 2616 (2011).
- (182) S Kneip, C. McGuffey, F. Dollar, MS Bloom, V Chvykov, G Kalintchenko, **K Krushelnick**, A Maksimchuk, SPD Mangles, T Matsuoka, Z Najmudin, CAJ Palmer, J Schreiber, W Schumaker, AGR Thomas, V Yanovsky, “X-ray phase contrast imaging of biological specimens with femtosecond pulses of betatron radiation from a compact laser plasma wakefield accelerator” *Applied Physics Letters* **99**, 093701 (2011).
- (181) F Dollar, T Matsuoka, GM Petrov, AGR Thomas, SS Bulanov, V Chvykov, J Davis, G Kalinchenko, C McGuffey, L Willingale, V Yanovsky, A Maksimchuk, **K Krushelnick**, “Control of Energy Spread and Dark Current in Proton and Ion Beams Generated in High-Contrast Laser Solid Interactions”, *Physical Review Letters* **107**, 065003 (2011).
- (180) L Willingale, GM Petrov, A Maksimchuk, J Davis, RR Freeman, AS Joglekar, T Matsuoka, CD Murphy, VM Ovchinnikov, AGR Thomas, L Van Woerkom, **K Krushelnick**, “Comparison of bulk and pitcher-catcher targets for laser-driven neutron production”, *Physics of Plasmas* **18**, 083106 (2011).
- (179) C Zulick, F Dollar, H Chen, K Falk, G Gregori, A Hazi, CD Murphy, J Park, J Seely, CI Szabo, R Tommasini, R Shepherd, **K Krushelnick**, “K-shell spectroscopy of Au plasma generated with a short-pulse laser” *Canadian Journal of Physics* **89**, 647 (2011).
- (178) L Willingale, PM Nilson, AGR Thomas, SS Bulanov, A Maksimchuk, W Nazarov, TC Sangster, C Stoeckl, **K Krushelnick**, “High-power, kilojoule laser interactions with near-critical density plasma” *Physics of Plasmas* **18**, 056706 (2011).
- (177) BX Hou, JA Nees, ZH He, G Petrov, J Davis, JH Easter, AGR Thomas, **KM Krushelnick**, “Laser-ion acceleration through controlled surface contamination” *Physics of Plasmas* **18**, 040702 (2011).

- (176) L Willingale, PM Nilson, AGR Thomas, J Cobble, RS Craxton, A Maksimchuk, PA Norreys, TC Sangster, RHH Scott, C Stoeckl, C Zulick, **K Krushelnick**, “High-Power, Kilojoule Class Laser Channeling in Millimeter-Scale Underdense Plasma”, *Physical Review Letters* **106**, 105002 (2011)
- (175) CM Huntington, AGR Thomas, C McGuffey, T Matsuoka, V Chvykov, G Kalintchenko, S Kneip, Z Najmudin, C Palmer, V Yanovsky, A Maksimchuk, RP Drake, T Katsouleas, **K Krushelnick**, “Current Filamentation Instability in Laser Wakefield Accelerators”, *Physical Review Letters* **106**, 105001 (2011)
- (174) S Kneip, SR Nagel, C Bellei, O Cheklov, RJ Clarke, N Delerue, EJ Divall, G Doucas, K Ertel, F Fiuza, R Fonseca, P Foster, SJ Hawkes, R Heathcote, CJ Hooker, **K Krushelnick**, SF Martins, CAJ Palmer, KT Phuoc, P Rajeev, J Schreiber, LO Silva, MJV Streeter, D Urner, J Vieira, SPD Mangles, Z Najmudin, “Study of near-GeV acceleration of electrons in a non-linear plasma wave driven by a self-guided laser pulse” *Plasma Physics and Controlled Fusion* **53**, 014008 (2011).
- (173) L Willingale, GM Petrov, A Maksimchuk, J Davis, RR Freeman, T Matsuoka, CD Murphy, VM Ovchinnikov, L Van Woerkom **K Krushelnick**, “Front versus rear side light-ion acceleration from high-intensity laser-solid interactions” *Plasma Physics and Controlled Fusion* **53**, 014011 (2011).
- (172) Petrov, G. M., Willingale, L., Davis, J., Petrova, Tz., Maksimchuk, A., **Krushelnick, K.** “The impact of contaminants on laser-driven light ion acceleration”, *Physics of Plasmas* **17**, 103111 (2010)
- (171) Chvykov, P., Ongg, W., Easter, J., Hou, B., Nees, J., **Krushelnick, K.** “Microdroplet target synthesis for kilohertz ultrafast lasers”, *Journal of Applied Physics* **108**, 113301 (2010).
- (170) Dong, P, Reed, SA, Yi, SA, Kalmykov, SY, Shvets, G, Downer, MC, Matlis, NH, Leemans, WP, McGuffey, C, Bulanov, SS, Chvykov, V, Kalintchenko, G, **Krushelnick, K.** Maksimchuk, A, Matsuoka, T, Thomas, AGR, Yanovsky, V, “Visualization of plasma bubble accelerators using Frequency-Domain Shadowgraphy” *High Energy Density Physics* **6**, 153 (2010).
- (169) Easter, JH, Mordovanakis, AG, Hou, BX, Thomas, AGR, Nees, JA, Mourou, G, **Krushelnick, K.** “High-order harmonic generation from solid targets with 2 mJ pulses” *Optics Letters* **35**, 3186 (2010).
- (168) L. Willingale, A. G. R. Thomas, P. M. Nilson, M. C. Kaluza, S. Bandyopadhyay, A. E. Dangor, R. G. Evans, P. Fernandes, M. G. Haines, C. Kamperidis, R. J. Kingham, S. Minardi, M. Notley, C. P. Ridgers, W. Rozmus, M. Sherlock, M. Tatarakis, M. S. Wei, Z. Najmudin, **K. Krushelnick**, “Fast Advection of Magnetic Fields by Hot Electrons” *Physical Review Letters* **105**, 095001 (2010).
- (167) M. Kaluza, S. P. D. Mangles, A. G. R. Thomas, Z. Najmudin, A. E. Dangor, C. D. Murphy, J. L. Collier, E. J. Divall, P. S. Foster, C. J. Hooker, A. J. Langley, J. Smith, **K. Krushelnick**, “Observation of a Long-Wavelength Hosing Modulation of a High-Intensity Laser Pulse in Underdense Plasma” *Physical Review Letters* **105**, 095003 (2010).
- (166) T. Matsuoka, S. Reed, C. McGuffey, S. S. Bulanov, F. Dollar, L. Willingale, V. Chvykov, G. Kalinchenko, A. Brantov, V. Yu. Bychenkov, P. Rousseau, V. Yanovsky, D. W. Litzenberg, **K. Krushelnick**, A. Maksimchuk, “Energetic electron and ion generation from interactions of intense laser pulses with laser machined conical targets” *Nuclear Fusion* **50**, 055006 (2010).
- (165) C. Bellei, S. R. Nagel, S. Kar, A. Henig, S. Kneip, C. Palmer, A. Savert, L. Willingale, D. Carroll, B. Dromey, J. S. Green, K. Markey, P. Simpson, R. J. Clarke, D. Neely, M. Kaluza, S. P. D. Mangles, P. McKenna, P. A. Norreys, J. Schreiber, M. Zepf, J. R. Davies, **K. Krushelnick**, and Z. Najmudin “Sub-micron Fast Electron Filaments and Recirculation determined from Rear Side Optical Emission in High Intensity Laser-Solid Interactions” *New Journal of Physics* **12**, 073016 (2010).
- (164) M. C. Kaluza, H. P. Schlenvoigt, S. P. D. Mangles, A. G. R. Thomas, A. E. Dangor, H. Schworer, W. B. Mori, Z. Najmudin, **K. Krushelnick** “Measurement of Magnetic-Field Structures in a Laser-Wakefield Accelerator” *Physical Review Letters* **105**, 115002 (2010).
- (162) S. Kneip, C. McGuffey, J. L. Martins, S. F. Martins, C. Bellei, V. Chvykov, F. Doillar, R. Fonseca, C. Huntington, G. Kalintchenko, A. Maksimchuk, S. P. D. Mangles, T. Matsuoka, S. R. Nagel, C. Palmer, J. Schreiber, K. Ta Phoac, A. G. R. Thomas, V. Yanovsky, L. O. Silva, K. Krushelnick, Z. Najmudin, “A Bright Spatially Coherent Compact X-ray Synchrotron Source” *Nature Physics* **6**, 980 (2010).
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