Curriculum Vitae

WILLIAM FOX

University of Maryland, Department of Physics
Institute for Research in Electronics and Applied Physics
1201F Energy Research Facility
8279 Paint Branch Dr, College Park, MD 20742
ph: 617-833-5215
willfox@umd.edu

ORCID: 0000-0001-6289-858X

EDUCATION:

Ph.D., Massachusetts Institute of Technology, Department of Physics, 2009
B.A., Princeton University, Physics, Magna Cum Laude, 2001

PROFESSIONAL POSITIONS:

University of Maryland, Department of Physics	
Assistant Professor	1/2025 - present
Princeton Plasma Physics Laboratory	
Principal Research Physicist	1/2024 - 12/2024
Research Physicist	1/2019 - 12/2023
Staff Research Physicist	9/2013 - 12/2018
Princeton University Department of Astrophysical Sciences	
Lecturer, Program for Plasma Physics	9/2020 - present
Visiting Associate Research Scholar	9/2017 - 9/2020
Lawrence Livermore National Laboratory	
Visiting Scientist	2/2017 - present
University of New Hampshire	
Research Scientist III, Space Science Center	11/2011-9/2013
Research Scientist II, Space Science Center	6/2009-11/2011
Research Assistant, MIT Plasma Science and Fusion Center	9/2002-6/2009
Miklos Porkolab, Thesis Advisor	

TEACHING POSITIONS:

Lecturer, Princeton Program in Plasma Physics	2020 - 2024
Princeton University Department of Astrophysical Sciences	

TA for Physics 123, "Laboratory Electronics,"
Harvard University Extension School, Cambridge, MA 2003 - 2005

High School Math and Physics Teacher,
Rato Bangala School, Kathmandu, Nepal 2001 - 2002

AWARDS:

John Dawson Award for Excellence in Plasma Physics Research, APS Division of Plasma Physics, 2020
Thomas H. Stix Award for Outstanding Early Career Contributions to Plasma Physics Research, APS Division of Plasma Physics, 2019
Outstanding Student Paper, American Geophysical Union Fall Conference, 2005
U.S. Department of Energy ORISE Fusion Energy Sciences (FES) Fellowship 2003-2006
MIT Physics Department Graduate Fellowship, 2002-2003
Shenstone Experimental Thesis Prize, Princeton University, Phi Beta Kappa, 2001

SERVICE AND LEADERSHIP POSITIONS:

Reviewer for: Physical Review Letters, Nature Physics, The Astrophysical Journal, Proceedings of the National Academy of Sciences, Physics of Plasmas, Journal of Applied Physics

Organizing Committee, 2024 APS Division of Plasma Physics, Sub-Chair for Astrophysics and Space Plasmas

Organizer, "Charged Particle Radiography in High-Energy-Density Laboratory Plasmas", Jan 2021, attended by 20 scientific presentations, Princeton Center for Theoretical Physics, Princeton, NJ.
Organizing Committee, 2019 DPP HEDP Subcommittee member

Organizing Committees, 2015 APS Division of Plasma Physics Annual Meeting, Sub-Chair for Astrophysical and Space Plasmas;

Organizer, "3rd LaB Meeting on Dynamics of Magnetic Fields in High-Energy-Density plasmas", Nov 2015, attended by 50 scientific presentations, Princeton Center for Theoretical Physics, Princeton, NJ.

Led community white paper, "Pulsed-power User Facility" for 2019 Division of Plasma Physics Community Planning Process.

Led community white paper, "Laboratory astrophysics and basic plasma physics with high-energy-density, laser-produced plasmas" for 2014 and 2016 FESAC Strategy Panels

Organized "Young CMSO" meeting, attended by 25 post-docs and graduate students before 2011 Center for Magnetic Self-Organization (NSF/DOE Science Frontier Center) General Meeting, Durham, NH

GRADUATE STUDENT AND POST-DOCTORAL MENTORSHIP:

Sophia Malko (post-doc, presently Staff Research Scientist at PPPL)
Sayak Bose (post-doc, presently Staff Research Scientist at PPPL)
Derek Schaeffer (post-doc, presently Assistant Professor at UCLA)
Jaehong Park (post-doc, presently Research Scientist at KLA Semiconductor)
Kirill Lezhnin (Princeton Ph.D. in Astrophysical Sciences, 2022, presently Post-Doc at PPPL)
Frances Kraus (Princeton Ph.D. in Astrophysical Sciences, 2022, presently Staff Scientist at PPPL)
Jackson Matteucci (Princeton Ph.D. in Astrophysical Sciences, 2020)
Clément Moissard (Masters, presently Lecturer at University of York, UK)

PUBLICATIONS *(Google scholar H-index 34 as of 9-1-2024)*:

See *https://scholar.google.com/citations?user=mJX7u8gAAAAJ&hl=en*

** = first-author graduate student or post-doc directly advised by W. Fox*
*** = W. Fox corresponding author*

Plasma Astrophysics and High-Energy Density Plasmas at OMEGA and NIF

1. K. V. Lezhnin*, S. R. Totorica, A. S. Hyder, J. Griff-McMahon, M. B. Adams, P. Tzeferacos, A. Diallo, and **W. Fox** "Particle-in-cell simulations of expanding high energy density plasmas with laser ray tracing", submitted to Phys. Plasmas (2024).

2. J. Griff-McMahon*, V. Valenzuela-Villaseca, S. Malko, G. Fiksel, M. J. Rosenberg, D. B. Schaeffer, **W. Fox**, "Proton Radiography Inversions with Source Extraction and Comparison to Mesh Methods," to appear in Phys. Rev E (2024). Available https://arxiv.org/abs/2408.10879

3. J. Griff-McMahon*, S. Malko, V. Valenzuela-Villaseca, C. Walsh, G. Fiksel, M. J. Rosenberg, D. B. Schaeffer, and **W. Fox**, "Measurements of extended magnetic fields in laser-solid interaction, Phys. Rev. Research **6**, 033312 (2024).

4. S. Malko*, D. B. Schaeffer, W. Yao, V. Valenzuela-Villaseca, C. Johnson, G. Fiksel, A. Ciardi, and **W. Fox**, "Observation of a magneto-Rayleigh-Taylor instability in magnetically collimated plasma jets," Phys. Rev. Research **6**, 023330 (2024).

5. V. Valenzuela-Villaseca*, J. M. Molina, D. B. Schaeffer, S. Malko, J. Griff-McMahon, K. Lezhnin, M. J. Rosenberg, S.X. Hu, D. Kalantar, C. Trosseille, H.-S. Park, B. A. Remington, G. Fiksel, D. Uzdensky, A. Bhattacharjee, **W. Fox**, "X-ray imaging and electron temperature evolution in laser-driven magnetic reconnection experiments at the National Ignition Facility", Phys. Plasmas **31**, 082106 (2024).

6. **W. Fox**, G. Fiksel, D.B. Schaeffer, J. Griff-McMahon. "Proton deflectometry analysis in magnetized plasmas: magnetic field reconstruction in one dimension". Phys. Rev. E **110**, 015206 (2024).

7. S. R. Totorica, K. Lezhnin, D. J. Hemminga, J. Gonzalez, J. Sheil, A. Diallo, A. Hyder, **W. Fox,** "Acceleration Mechanisms of Energetic Ion Debris in Laser-Driven Tin Plasma EUV Sources". Appl. Phys. Lett 124, 174101 (2024).

8. P. Pongkitiwanichakul, D. B. Schaeffer, **W. Fox**, D. Ruffolo, J. Donaghy, and K. Germaschewski, "Kinetic Simulations Comparing Quasi-Parallel and Quasi-Perpendicular Piston-Driven Collisionless Shock Dynamics in Magnetized Laboratory Plasmas", Phys. Plasmas 31, 012901 (2024).

9. D.B. Schaeffer, A.F. A. Bott, M. Borghesi, K. A. Flippo, **W. Fox**, J. Fuchs, C. K. Li, H.-S. Park, F. H. Seguin, P. Tzeferacos, L. Willingale. "Proton imaging of high-energy-density laboratory plasmas", Rev. Mod. Phys. 95, 045007 (2023).

10. **W. Fox,** G. Fiksel, D. B. Schaeffer, D. Haberberger, J. Matteucci, K. Lezhnin, A. Bhattacharjee, M.J. Rosenberg, S.X. Hu, A. Howard, D. Uzdensky, K. Germaschewski "Imaging the formation and breakup of a magnetic reconnection current sheet in the collisionless ion regime", submitted to Phys. Rev. X, (2023), available arXiv: arxiv.org/abs/2112.03316.

11. **W. Fox,** D.B. Schaeffer, M.J. Rosenberg, G. Fiksel, J. Matteucci, H.S. Park, K. Lezhnin, A. Bhattacharjee, D. Kalantar, B.A. Remington, D. Uzdensky, C.K. Li, F. Seguin, and S.X. Hu "Fast magnetic reconnection in highly-extended current sheets at the National Ignition Facility", submitted to Phys. Rev. Lett. (2021), available arXiv: arxiv.org/abs/2003.06351.

12. B. F. Kraus*, Lan Gao, **W. Fox**, K. W. Hill, M. Bitter, P. C. Efthimion, A. Moreau, R. Hollinger, Shoujun Wang, Huanyu Song, and J. J. Rocca, "Ablating Ion Velocity Distributions in Short-Pulse-Heated Solids via X-Ray Doppler Shifts", Phys. Rev. Lett. 129, 235001 (2022).

13. C.L. Johnson* S. Malko, **W. Fox****, D.B. Schaeffer, G. Fiksel, P.J. Adrian, G. Sutcliffe, and A. Birkel, "Proton deflectometry with in situ x-ray reference for absolute measurement of electromagnetic fields in high-energy-density plasmas", Rev. Sci. Instrum. 93, 023502 (2022).

14. S. Malko*, C. Johnson, D.B.Schaeffer, **W. Fox**, G. Fiksel, "Design of proton deflectometry with *in situ* X-ray fiducial for magnetized HED systems", Appl. Opt. **61**, C133-C142 (2022).

15. G. Fiksel, **W. Fox**, M. Rosenberg, D. Schaeffer, J. Matteucci, A. Bhattacharjee. "Electron energization during merging of self-magnetized, high-beta, laser-produced plasmas", J. Plasma Phys. **87**(4) (2021).

16. D. B. Schaeffer, **W. Fox**, M. J. Rosenberg, H.-S. Park, G. Fiksel, D. Kalantar. "Measurements of electron temperature in high-energy-density plasmas using gated x-ray pinhole imaging", Rev. Sci. Instrum. 92(4):043524 (2021).

17. P.-A. Gourdain, M. Evans, P. Efthimion; R. Ellis, **W. Fox,** H. R. Hasson, H. Ji, R. V. Shapovalov, J. R. Young, *et al*, "Coreless Fast Pulsed-Power Drivers," in IEEE Trans. Plasma Sci. 49:7, 2161-2165, doi: 10.1109/TPS.2021.3086322 (2021).

18. K. V. Lezhnin*, **W. Fox**, D. B. Schaeffer, A. Spitkovsky, J. Matteucci, A. Bhattacharjee, and K. Germaschewski, "Kinetic Simulations of Electron Pre-energization by Magnetized Collisionless Shocks in Expanding Laboratory Plasmas", Astrophys. J. Lett. 908:L52 (2021).

19. P. Pongkitiwanichakul, **W. Fox**, D. Ruffolo, K. Malakit, K. V. Lezhnin, J. Matteucci, and A. Bhattacharjee, "Ion Acceleration in Driven Magnetic Reconnection during High-energy–Density Plasma Interaction", Astrophys. J, 907:86, (2021).

20. D. B. Schaeffer, **W. Fox**, J. Matteucci, K. V. Lezhnin, A. Bhattacharjee, and K. Germaschewski, "Kinetic simulations of piston-driven collisionless shock formation in magnetized laboratory plasmas," Physics of Plasmas 27, 042901 (2020).

21. D. B. Schaeffer, **W. Fox**, R. K. Follett, G. Fiksel, C. K. Li, J. Matteucci, A. Bhattacharjee, and K. Germaschewski, "Direct Observations of Particle Dynamics in Magnetized Collisionless Shock Precursors in Laser-Produced Plasmas" Phys. Rev. Lett. 122, 245001 (2019).

22. K.V. Lezhnin*, **W. Fo**x, J. Matteucci, D. B. Schaeffer, A. Bhattacharjee, and K. Germaschewski "Regimes of magnetic reconnection in colliding laser-produced magnetized plasma bubbles," Phys. Plasmas **25**, 093105 (2018).

23. J. Matteucci*, **W. Fox**, A. Bhattacharjee, D. B. Schaeffer, C. Moissard, K. Germaschewski, G. Fiksel, and S. X. Hu, "Biermann battery-mediated magnetic reconnection in 3-D colliding plasmas", Phys. Rev. Lett, **121**, 095001 (2018).

24. **W. Fox**, J. Matteucci, C. Moissard, D. B. Schaeffer, A. Bhattacharjee, K. Germaschewski, and S. Hu, "Kinetic simulation of magnetic field generation and collisionless shock formation in expanding laboratory plasmas" Phys. Plasmas **25**, 102106 (2018).

25. A. E. Raymond, C. F. Dong, A. McKelvey, C. Zulick, N. Alexander, A. Bhattacharjee, P. T. Campbell, H. Chen, V. Chvykov, E. Del Rio, P. Fitzsimmons, **W. Fox,** B. Hou, A. Maksimchuk, C. Mileham, J. Nees, P. M. Nilson, C. Stoeckl, A. G. R. Thomas, M. S. Wei, V. Yanovsky, K. Krushelnick, and L. Willingale, "Relativistic-electron-driven magnetic reconnection in the laboratory" Phys. Rev. E **98**, 043207 (2018).

26. **W. Fox**, J. Park, W. Deng, G. Fiksel, A. Spitkovsky, and A. Bhattacharjee, "Astrophysical particle acceleration mechanisms in colliding magnetized laser-produced plasmas" Phys. Plasmas **24**, 092901 (2017).

27. D. B. Schaeffer*, **W. Fox**, D. Haberberger, G. Fiksel, A. Bhattacharjee, D. H. Barnak, S. X. Hu, and K. Germaschewski, "High-Mach Number, Laser-Driven Magnetized Collisionless Shocks," Phys. Plasmas **24**, 122702 (2017).

28. D. B. Schaeffer*, **W. Fox**, D. Haberberger, G. Fiksel, A. Bhattacharjee, D. H. Barnak, S. X. Hu, and K. Germaschewski, "Generation and Evolution of High-Mach Number, Laser-Driven Magnetized Collisionless Shocks in the Laboratory," Phys. Rev. Lett **119**, 025001 (2017).

29. C. Liu*, **W. Fox**, A. Bhattacharjee, A. G. R. Thomas, and A. Joglekar, "Momentum transport and non-locality in heat-flux-driven magnetic reconnection in high energy density plasmas," Phys. Rev. E **96**, 043203 (2017).

30. G. Fiksel, **W. Fox,** L. Gao, and H. Ji, "A simple model for estimating a magnetic field in laser-driven coils," Applied Phys. Lett. 109, 134103 (2016).

31. L. Gao, H. Ji, G. Fiksel, **W. Fox**, M. Evans, and N. Alfonso, "Ultrafast proton radiography of the magnetic fields generated by a laser-driven coil current", Phys. Plasmas **23**, 043106 (2016).

32. C. Liu*, **W. Fox**, and A. Bhattacharjee, "Heat flux viscosity in collisional magnetized plasmas," Physics of Plasmas **22**, 053302 (2015).

33. M. J. Rosenberg, C. K. Li, **W. Fox**, et al, "Slowing of Magnetic Reconnection Concurrent with Weakening Plasma Inflows and Increasing Collisionality in Strongly Driven Laser-Plasma Experiments", Phys. Rev. Lett. **114**, 205004 (2015).

34. M.J. Rosenberg, C.K. Li, **W. Fox**, I. Igumenshchev, FH Séguin, RPJ Town, JA Frenje, C Stoeckl, V Glebov, RD Petrasso, "First experiments probing the collision of parallel magnetic fields using laser-produced plasmas", Phys. Plasmas **22** 042703 (2015).

35. M.J. Rosenberg, C.K. Li, **W. Fox**, et al, "A laboratory study of asymmetric magnetic reconnection in strongly driven plasmas," Nature Comms. **6**, 6190 (2015).

36. A. Joglekhar, A. Thomas, **W. Fox**, A. Bhattacharjee, "Magnetic Reconnection in Plasma under Inertial Confinement Fusion Conditions Driven by Heat Flux Effects in Ohm's Law" Phys. Rev. Lett. 112, 105004 (2014).

37. G. Fiksel, **W. Fox**, A. Bhattacharjee, P. Y. Chang, K. Germaschewski, S. X. Hu, and P. M Nilson, "Magnetic reconnection between colliding magnetized, laser-produced plasma plumes" Phys. Rev. Lett., 113, 105003 (2014).

38. **W. Fox**, G. Fiksel, A. Bhattacharjee, P. Y. Chang, K. Germaschewski, S. X. Hu, and P. M. Nilson, "Filamentation instability of counterstreaming laser-driven plasmas," Phys. Rev. Lett. **111**, 225002 (2013).

39. **W. Fox**, A. Bhattacharjee and K. Germaschewski, "Magnetic reconnection in high-energy-density laser-produced plasmas," Phys. Plasmas **19**, 056309 (2012).

40. **W. Fox**, A. Bhattacharjee and K. Germaschewski, "Fast magnetic reconnection in laser produced plasma bubbles," Phys. Rev. Lett **106**, 215003 (2011).

Magnetic Reconnection in Tokamaks and Magnetic Fusion Energy

41. C.T. Holcomb, et al, "DIII-D research to provide solutions for ITER and fusion energy." Nucl. Fusion **64** 112003 doi: 10.1088/1741-4326/ad2fe9 (2024).

42. D. Liu*, **W. Fox****, S. Bose, H. Ji, S. Jardin, and N. Ferraro, "On discriminating tokamak sawtooth crash models via localized density and temperature measurements." Phys. Plasmas 31, 032512 (2024); doi: 10.1063/5.0186504

43. M.E. Fenstermacher, et al, “DIII-D research advancing the physics basis for optimizing the tokamak approach to fusion energy”, Nucl. Fusion 62 042024, doi:10.1088/1741-4326/ac2ff2 (2024).

44. S. Bose*, **W. Fox**, D. Liu, Z. Yan, G. McKee, A. Goodman, and H. Ji, “Two-dimensional plasma density evolution local to the inversion layer during sawtooth crash events using Beam Emission Spectroscopy” Rev. Sci. Instrum. 93, 093521 (2022).

Magnetic Reconnection on the MRX Facility at PPPL

45. F. Pucci, M. Velli, C. Shi, K. Singh, A. Tenerani, F. Alladio, F. Ambrosino, P. Buratti, **W. Fox,** J. Jara-Almonte, H. Ji, M. Yamada, J. Yoo, S. Okamura, R. Ergun, S. Hoilijoki, and S. Schwarz, "Onset of fast magnetic reconnection and particle energization in laboratory and space plasmas", J. Plasma Phys. **86**, 53586061 (2020).

46. Jongsoo Yoo Jeong-Young Ji M. V. Ambat, S. Wang, H. Ji, J. Lo, B. Li. Y. Ren, J. Jara-Almonte, L.-J. Chen, **W. Fox**, M. Yamada, A. Alt, A. Goodman, “Lower Hybrid Drift Waves During Guide Field Reconnection” Geophys. Res. Lett. **47** e2020GL087192 (2020).

47. **W. Fox**, F. D. Wilder, S. Eriksson, J. Jara-Almonte, F. Pucci, J. Yoo, H. Ji, M. Yamada, R. E. Ergun, M. Oieroset, and T. D. Phan, “Energy conversion by parallel electric fields in reconnection diffusion regions in scaled laboratory and space experiments” Geophys. Res. Lett **45**, 12677 (2018).

48. J. Jara-Almonte, H. Ji, J. Yoo, M. Yamada, **W. Fox**, and W. Daughton, “Kinetic Simulations of Magnetic Reconnection in Partially Ionized Plasmas” Phys. Rev. Lett. **122**, 015101 (2019).

49. F. Pucci, S.Usami, H. Ji, X. Guo, R. Horiuchi, S. Okamura, **W. Fox**, J. Jara-Almonte, M. Yamada, and J. Yoo, “Energy transfer and electron energization in collisionless magnetic reconnection for different guide-field intensities,” Phys. Plasmas **25**, 122111 (2018).

50. M. Yamada, L. J. Chen, J. Yoo, S. Wang, **W. Fox**, J. Jara-Almonte, H. Ji, W. Daughton, A. Le, J. Burch, B. Giles, M. Hesse, T. Moore, R. Torbert, “The two-fluid dynamics and energetics of asymmetric magnetic reconnection in laboratory and space plasmas” Nature Communications **9**, 5223 (2018). (2018).

51. J. Yoo, J. Jara-Almonte, E. Yerger, S. Wang, T. Quan, A, Le, H. Ji, M. Yamada, **W. Fox**, E.-H. Kim, L.-J. Chen, D. J. Gershman, “Whistler wave generation by anisotropic tail electrons during asymmetric magnetic reconnection in space and laboratory,” Geophys. Res. Lett. **45**, 8054 (2018).

52. A. v. Stechow*, **W. Fox**, J. Jara-Almonte, J. Yoo, H. Ji, and M. Yamada, “Electromagnetic fluctuations during guide field reconnection in a laboratory plasma”, Phys. Plasmas **25**, 052120 (2018).

53. **W. Fox**, F. Sciortino, A. v. Stechow, J. Jara-Almonte, J. Yoo, H. Ji, and M. Yamada, “Experimental verification of the role of electron pressure in fast magnetic reconnection with a guide field,” Phys. Rev. Lett **118** (12), 125002 (2017).

54. J. Yoo, B. Na, J. Jara-Almonte, M. Yamada, H. Ji, V. Roytershteyn, M. R. Argall, **W. Fox**, and L.-J. Chen, "Electron heating and energy inventory during asymmetric reconnection in a laboratory plasma" J. Geophys. Res. **122**, 9264 (2017).

55. J. Jara-Almonte, H. Ji, M. Yamada, J. Yoo, and **W. Fox** "Laboratory Observation of Resistive Electron Tearing in a Two-Fluid, Reconnecting Current Sheet" Phys. Rev. Lett (2016).

56. C. E. Myers, M. Yamada, H. Ji, J. Yoo, **W. Fox**, J. Jara-Almonte, A. Savcheva, E. E. DeLuca, "A Dynamic Magnetic Tension Force as the cause of Failed Solar Eruptions," *Nature* **528**, 526–529 (2015).

57. C.E. Myers, M. Yamada, H. Ji, J. Yoo, J. Jara-Almonte, W. Fox, "Laboratory study of low-β forces in arched, line-tied magnetic flux ropes", Physics of Plasmas 23 (11), 112102.

58. C.E. Myers, M. Yamada, H. Ji, J. Yoo, J. Jara-Almonte, W. Fox, "Quasi-static and dynamic magnetic tension forces in arched, line-tied magnetic flux ropes", Plasma Physics and Controlled Fusion 59 (1), 014048 (2016).

59. R. Kulsrud, H. Ji, W. Fox, and M. Yamada, "An electromagnetic drift instability in the magnetic reconnection experiment and its importance for magnetic reconnection," Phys. Plasmas 12, 082301 (2005).

60. H. Ji, R. Kulsrud, W. Fox, M. Yamada, "An obliquely propagating electromagnetic drift instability in the lower hybrid frequency range," Journal of Geophysical Research: Space Physics 110 (A8), (2005).

Computational Plasma Physics

61. K. Germaschewski, **W. Fox**, S. Abbott, N Ahmadi, K. Maynard, L. Wang, H. Ruhl, A. Bhattacharjee, "The Plasma Simulation Code: A modern particle-in-cell code with patch-based load-balancing," J. Comp. Phys. **318**, 305-326, (2016).

Dipole-confined plasmas

62. **W. Fox**, "Parallel resistivity and ohmic heating of laboratory dipole plasmas," Phys. Plasmas **19**, 082509 (2012).

Basic Plasma Physics

63. S. D. Baalrud, T. Lafleur, **W. Fox**, and K. Germaschewski, "Instability-Enhanced Friction in the Presheath of Two-Ion-Species Plasmas", Plasma Sources Sci. Technol. **24** 015034 (2015).

Magnetic Reconnection – Versatile Toroidal Facility (VTF) Experiment and Theory

64. **W. Fox**, M. Porkolab, J. Egedal, N. Katz, A. Le. "Observations of electron phase-space holes driven during magnetic reconnection in a laboratory plasma," Phys. Plasmas **19**, 032118 (2012).

65. J. Egedal, N. Katz, J. Bonde, **W. Fox**, A. Le, M. Porkolab, and A. Vrublevskis. "Spontaneous onset of magnetic reconnection in toroidal plasma caused by breaking of 2D symmetry," Phys. Plasmas **18,** 111203 (2011).

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67. N. Katz, J Egedal, **W. Fox,** A. Le, J. Bonde, and A. Vrublevskis, "Laboratory Observation of Localized Onset of Magnetic Reconnection," Phys. Rev. Lett **104**, 255004 (2010)

68. **W. Fox**, M. Porkolab, J. Egedal, N. Katz, A. Le. "Laboratory observations of electron energization and associated lower-hybrid and Trivelpiece-Gould wave turbulence during magnetic reconnection," Phys. Plasmas **17**, 072303 (2010).

69. A. Le, J. Egedal, W. Daughton, J. Drake, **W. Fox**, N. Katz, "Magnitude of the Hall Fields during magnetic reconnection," Geophys. Res. Lett. **37**, L03106 (2010).

70. A. Le, J. Egedal, **W. Fox**, N. Katz, A. Vrublevskis, W. Daughton, and J. Drake, "Equations of state in collisionless magnetic reconnection," Physics of Plasmas **17**, 055703, (2010).

71. **W. Fox**, M. Porkolab, J. Egedal, N. Katz, A. Le. "Laboratory observation of electron phase-space holes during magnetic reconnection," Phys. Rev. Lett. **101**, 255003 (2008).

72. **W. Fox.** *Experimental Study of Current-Driven Turbulence During Magnetic Reconnection*. Ph.D. Dissertation, (May 2009).

73. A. Le, J. Egedal, W. Daughton, **W. Fox**, N. Katz, "The Equations of State for Collisionless Guide-Field Reconnection," Phys. Rev. Lett. **102**, 085001 (2009).

74. J. Egedal, **W. Fox**, N. Katz, M. Porkolab, M. Øieroset, R. P. Lin, W. Daughton, and J. F. Drake, "Evidence and theory for trapped electrons in guide field magnetotail reconnection," J. Geophys. Res., **113**, A12207 (2008).

75. N. Katz, J. Egedal, **W. Fox**, *et al* "Experiments on the propagation of plasma filaments," Phys. Rev. Lett. **101**, 015003. (2008).

76. J. Egedal, **W. Fox,** N. Katz, M. Porkolab, K. Reim, E. Zhang, "Laboratory observation of spontaneous magnetic reconnection," Phys. Rev. Lett. 98, 015003. (2007).

77. A Stark, J Egedal, **W Fox**, O Grulke, T Klinger, Phase-resolved measurements of ion dynamics with laser-induced fluorescence, Physica Scripta 2006 (T122), (2006).

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79. J. Egedal, **W. Fox**, M. Porkolab and A. Fasoli, "Eigenmode response to driven magnetic reconnection in a collisionless plasma," Phys. Plasmas, **12**, 052107. (2005).

80. A. Stark, **W. Fox**, J. Egedal, O. Grulke, and T. Klinger. "Laser-Induced fluorescence measurement of the ion-energy-distribution function in a collisionless reconnection experiment," Phys. Rev. Lett. **95**, 235005 (2005).

81. J. Egedal, **W. Fox**, M. Porkolab and A. Fasoli, "Experimental evidence of fast reconnection via trapped electron motion," Physics of Plasmas, **11**, 2844, (2004).

82. J. Egedal, **W. Fox**, E. Bolonohy and M. Porkolab, "Kinetic simulation of the VTF magnetic reconnection experiment," Computer Physics Communications **164**, 29. (2004)

Magnetic Fusion Experiments

83. C.C. Petty, **W. R. Fox**, T.C. Luce, M.A. Makowski and T. Suzuki. "Analysis of current drive using MSE polarimetry without equilibrium reconstruction." Nucl. Fusion **42,** 1124. (2002).

84. C.C. Petty, R. Prater, J. Lohr, T.C. Luce, **W. R. Fox**, R.W. Harvey, J.E. Kinsey, L.L. Lao and M.A. Makowski. "Detailed measurements of the electron cyclotron current drive efficiency on DIII-D." Nucl. Fusion **42**, 1366. (2002).

Liquid Metal Surface Waves, Princeton Plasma Physics Lab, Princeton, NJ. Undergraduate Thesis Advisor: Dr. Hantao Ji, PPPL.

85. W. Fox *Magnetohydrodynamic Surface Waves in Liquid Metal*. A.B. Thesis. Princeton University Physics Department. (2001).

86. H. Ji, **W. Fox**, D. Pace, and H. Rappaport, "Study of magnetohydrodynamic surface waves in liquid gallium" Phys. Plasmas **12**, 012102 (2005).

INVITED TALKS:

1. "Proton radiography observations of magnetic reconnection in high-energy-density laser-produced plasmas" Invited presentation at Stewardship Science Academic Program Symposium, Santa Fe, NM 2023.

2. "Magnetic reconnection in high-energy-density laser-produced plasmas," Invited Presentation at 2022 US-Japan Magnetic Reconnection Workshop, Monterey, CA

3. "Fast Magnetic Reconnection during Sawtooth Crash Events at DIII-D" Invited Presentation at MagNetUS Workshop, William and Mary, VA 2022.

4. "Magnetic reconnection in high-energy-density laser-produced plasmas" Invited presentation at Stewardship Science Academic Program Symposium 2022

5. "Magnetic reconnection in highly-extended current sheets in laser-produced plasmas". Invited presentation at Max-Planck Princeton Center Workshop meeting 2021

6. “Insights into magnetic reconnection in highly-extended current sheets using laser-produced plasmas” American Geophysical Union Fall Meeting 2020

7. “Bringing astrophysical plasmas to the laboratory with magnetized laser-produced plasmas” Invited Seminar at MIT Plasma Science and Fusion Center, Dec 2020

8. “Bringing astrophysical plasmas to the laboratory with magnetized laser-produced plasmas” Invited Plasma Seminar at CU-Boulder, Nov 2020

9. “Magnetic reconnection experiments with highly-extended currents sheets and plasmoid instabilities in laser produced plasmas”. Invited presenting to Simons Foundation, July 2020.

10. “Magnetic reconnection, collisionless shocks, and particle acceleration in the laboratory” APS Division of Plasma Physics 2019 Invited Stix Award Presentation

11. “Kinetic simulations for laboratory astrophysics with laser-produced plasmas” Invited mini-conference presentation, APS Division of Plasma Physics 2019

12. “Laboratory astrophysics with magnetized laser-produced plasmas” presentation at Z Fundamental Science Workshop, Albuquerque, NM, Aug 2019

13. “Dynamics of Magnetic Reconnection in High-Energy-Density Plasmas” Invited talk at Stewardship Science Annual Symposium, Bethesda, MA, Feb 2019

14. “Magnetic Reconnection in colliding laser produced plasmas,” Invited talk at High Energy-Density Laboratory Astrophysics (HEDLA) Conference, June 2018, Kurashiki, Japan.

15. “Magnetic Reconnection Experiments at the National Ignition Facility,” Invited talk at the NIF User Group meeting, Livermore, CA, Feb 2018.

16. “Dynamics of Magnetic Reconnection in High-Energy-Density Plasmas”, Invited talk at NNSA Stewardship Science Academic Partnerships Symposium, Bethesda, MD, Feb 2018

17. “Experimental demonstration of the role of electron pressure in fast magnetic reconnection” Invited talk at 2017 APS DPP.

18. “PPPL Research in Discovery Plasma Science” Invited presentation at PPPL PAC Meeting, Princeton, NJ May 2017.

19. “Experimental demonstration of the role of electron pressure in fast magnetic reconnection” Invited plenary presentation at Max-Planck-Princeton Center for Plasma Physics Meeting, Princeton, NJ Dec 2016.

20. “Laboratory Astrophysics with colliding magnetized laser-produced plasmas” University of Maryland Plasma Seminar, May 2016.

21. “Laboratory Astrophysics with colliding magnetized laser-produced plasmas” Naval Research Laboratory Plasma Seminar, May 2016.

22. W. Fox, “Dynamics and instabilities of magnetic reconnection current sheets in HED plasmas,” Invited talk at NNSA Stewardship Science Symposium, Bethesda, MD, Feb 2016

23. W. Fox “Magnetic reconnection in low-dissipation, large system size regimes on the NIF”, Invited talk at 2016 NIF User Group Meeting, Livermore, CA. Jan 2016.

24. “Experiments and simulations of Weibel instability and magnetic reconnection between colliding plasmas” Invited talk at 4th LaB Meeting on Magnetic Fields in High-Energy-Density Plasmas (Nov 2015).

25. W. Fox “Magnetic field generation, Weibel mediated collisionless shocks, and magnetic reconnection in colliding laser-produced plasmas,” Invited talk at International Astronomy Union IX General Assembly, Honolulu HI, Aug 2015

26. W. Fox “Colliding magnetized and unmagnetized high-energy-density plasmas for laboratory astrophysics,” Invited Talk at OPIC Conference on Laser Energetics, Yokohama Japan, April 2015

27. "Laboratory magnetic reconnection experiments with colliding magnetized plasma plumes", Invited talk at 2014 American Geophysical Union Fall Meeting, San Francisco, CA, Dec 2014.

28. “Observation of astrophysical Weibel Instability in counter-stream laser-produced plasmas,” Invited talk at 224th meeting of the American Astronomical Society, Boston, June 2014.

29. W. Fox “Astrophysical Weibel Instability in Counter-streaming laser-driven plasmas” Invited Talk at APS-Division of Plasma Physics, Nov 2014, New Orleans, LA.

30. “Astrophysical Weibel Instability in counter-streaming laser-driven plasmas” Invited talk at Center for Magnetic Self-Organization Annual Meeting, Santa Fe, NM, Mar 2014.

31. W. Fox “Dynamics and Instability of magnetic reconnection current sheets in HED plasmas” Invited talk at NNSA Stewardship Science Symposium, Bethesda, MD, Feb 2014.

32. “Magnetic Reconnection and Laboratory Astrophysics with Laser-produced plasmas,” Invited Plasma Seminar Laboratorie Physique Plasmas, ENS-Cachan, June, 2013

33. “Laboratory Astrophysics with Laser-Produced Plasmas” Caltech Applied Physics Seminar, April 2013.

34. W. Fox, “Magnetic Reconnection in High-Energy-Density Laser-Produced Plasmas,” MIT Plasma Science and Fusion Center Colloquium, Dec 2012.

35. W. Fox, “Fast Magnetic Reconnection in HED Laser-produced Plasmas”, Invited talk at High-Energy-Density Laboratory Astrophysics Conferences (HEDLA 2012), Tallahassee, May 2012.

36. W. Fox, “Studying Collisionless Magnetic Reconnection with Laboratory Plasmas”, UW-Madison Plasma Seminar, February 2012.

37. W. Fox, “Studying Collisionless Magnetic Reconnection with Laboratory Plasmas”, UT-Austin Plasma Seminar, March 2012.

38. “Magnetic Reconnection in High-Energy-Density Laser-Produced Plasmas,” APS Division of Plasma Physics Annual Meeting, Salt Lake City, 2011.

39. “Fast magnetic reconnection in high-energy-density laser produced plasma bubbles,” Invited talk at IPELS Meeting 2011 (Interaction of Plasma Experiments in Laboratory and Space Plasmas, Whistler, BC, July 2015.

40. “Fast magnetic reconnection in high-energy-density laser produced plasma bubbles,” Invited talk at Annual Meeting of CMSO (Center for Magnetic Self-Organization), Durham, NH, Oct 2011.

41. Electron phase-space holes driven during magnetic reconnection in a laboratory plasmas” Invited presentation at 2011 American Geophyiscs Union Annual Meeting, San Francisco CA, Dec 2011.

42. “Laboratory Studies of Electrostatic Fluctuations Driven During Magnetic Reconnection,” April 2008, University of Maryland Plasma Colloquium.