

# David Jerome Strozzi

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## CURRENT POSITION

Sept. 2008 – present: Staff Physicist, Design Physics Division, LLNL Research topics: laser-plasma interaction (LPI) modeling for inertial fusion; fast electron transport modeling for fast ignition; kinetic theory and simulation of LPI and plasma waves; radiation-hydrodynamics and magneto-hydrodynamics for ICF target design.

## PAST POSITIONS

Oct. 2005 – Sept. 2008: Post-doctoral research staff member, LLNL Supervisors: A Bruce Langdon, Max Tabak. Research: nonlinear kinetic theory and Eulerian Vlasov simulations of stimulated Raman scattering; calculations of backscatter for inertial-fusion targets using ray-based and paraxial propagation codes; electron transport for fast ignition.

## EDUCATION

- Princeton University, Princeton, NJ. AB, Physics, high honors (1999). Phi Beta Kappa; Sigma Xi; Kusaka Memorial Prize in Physics.
- Massachusetts Institute of Technology, Cambridge, MA. Ph.D, Physics (2005). Thesis advisor: Prof. Abraham Bers. Thesis: “Vlasov simulations of kinetic enhancement of Raman backscatter in laser fusion plasmas.”
- August 2006: High-Energy-Density Physics Summer School, by Prof. R Paul Drake, Traverse City, Michigan.

## FELLOWSHIPS

- 1999-2002: National Defense Science and Engineering Graduate Fellowship.

## GRANTS AWARDED

- FY2008-10: Principal investigator, LLNL Lab-Directed Research and Development (LDRD) grant 08-ERD-017: "Exploration of Laser-Plasma Interactions for High-Performance Laser-Fusion Targets." Budget: \$450k/year. Modeling work with continuum kinetic and particle-and-cell codes, and analytic theory.
- ACT-UP Academic Collaboration Team, 2021-2024: Principal investigator, work with Ryan Lau (PhD student, CU Boulder) on modeling MagLIF laser preheat experiments. Budget: \$95k/year.
- FY2023-25: Principal investigator, LLNL LDRD grant 23-ERD-025: “Optimal Uses of Magnetic Fields for Indirect-Drive Inertial Fusion.” Budget: \$850k/year. Modeling of magnetized NIF ignition designs, and conducting basic experiments on magnetized high-energy-density systems.

## PATENTS

- “High-resistivity metal alloy coatings fabricated with physical vapor deposition,” co-inventor, provisional 2020

## HONORS AND AWARDS

- LLNL Science & Technology Award:
  - 2023 “Achieving Ignition at the National Ignition Facility at LLNL.”
- LLNL Deputy Director’s Science & Technology Excellence in Publication Award:
  - 2023: “Increased Ion Temperature and Neutron Yield Observed in Magnetized Indirectly Driven D 2-Filled Capsule Implosions on the National Ignition Facility.” J D Moody et al., *Phys. Rev. Lett.* 2022.
- LLNL 2021 Director’s Science & Technology Award: “The Creation of a Burning Plasma in the Laboratory.”
- LLNL 2017 Deputy Director’s S&T Excellence in Publication Award: O Hurricane et al., *Nature Phys.* 2016.
- LLNL ICF Program awards: Backscatter Risk (2018); Magnetic field lecture (2017).
- DOE Defense Programs Award of Excellence 2016: NIF Shot Rate Enhancement.
- LLNL 2015 WCI Directorate awards: contribution to 2015 ignition review; development of inline laser-plasma interaction model.

- NNSA Defense Programs Team Award of Excellence: 2020: “Laser Indirect Drive Inertial Confinement Fusion Team”.
- LLNL 2012 AX Division Excellence in Publication award: D Strozzi, M Tabak et al., *Phys. Plasmas* 2012.

## SERVICE

- LLNL Lawrence Fellow Selection Committee: 2019 – 2022.
- Journal referee: Physical Review Letters, Physics of Plasmas, High Energy Density Physics.
- Session chair, APS Division of Plasma Physics meeting: 2023, 2022.
- Session chair, Anomalous Absorption Conference: 2023.

## STUDENTS SUPERVISED

LLNL summer interns:

- Robert Spiers (2024): Hydra modeling of NIF magnetized implosions, magnetized buoyancy-drag mix model
- Derek Kuldinow (2023): Adding anisotropic temperature to Gorgon MHD code
- Ryan Lau (2019, 2020) and CU Boulder graduate student (2019 – present): magnetized laser-plasma interactions and modeling MagLIF laser preheat experiments
- Eva Los (2017, 2018): Laser-plasma interactions in a magnetic field
- Andrew Dublin (2015): Fokker-Planck modeling of electron thermal conduction
- Will Farmer (2011): Simulations of fast-electron beam transport with LSP
- Ian Ellis (2009): PIC modeling of stimulated Raman scattering
- Ian Ellis: LLNL Lawrence scholar (2010-2014): Raman scattering, fast-electron stopping power

## SOFTWARE

- QnD: Quick ‘n’ Dirty: Python package for binary file access, originally by D. Munro: [github.com/LLNL/qnd](https://github.com/LLNL/qnd)
- VAMPIRE: Voronoi Adaptive Method for Propagation and Interaction of Radiated Energy: ray-base LPI code for CBET and backscatter, originally by A. Colaïtis
- DEplete and NEWLIP: ray-based LPI analysis tools, focused on post-processing rad-hydro output
- ELVIS: Eulerian Vlasov Integrator with Splines: 1D-1V kinetic code, used for nonlinear Langmuir waves, stimulated Raman scattering, magnetized LPI

## TEACHING EXPERIENCE

- Spring 2004: Teaching Assistant for Graduate Plasma Waves, MIT Professor: Miklos Porkolab.
- Fall 2003: Teaching Assistant for Introductory Physics, MIT Professor: Paul Schechter.

## RESEARCH EXPERIENCE

- Summer 2004: Intern at Lawrence Livermore National Lab. Mentors: Dr. Edward A Williams, Dr. A Bruce Langdon. Researched the role of electron trapping in stimulated Raman scattering.
- April 2001 - October 2005: Research assistant, Plasma Electrodynamics Group of Prof. Abraham Bers (MIT). Thesis on kinetic effects and inhomogeneity in stimulated Raman scattering. Developed 1-D Eulerian Vlasov Code ELVIS Also researched coherent ion energization by resonance of two electrostatic waves with ion cyclotron motion.
- Jan. 2000 - April 2001: Researched theoretical fluid models of collisionless magnetic reconnection with Dr. Jesus Ramos (MIT).
- Senior Thesis: “On the Origin of Interannual and Irregular Behavior in the El Niño.” Numerical and Theoretical work on chaotic and stochastic behavior in El Niño models. Advisor: Dr. Geoffrey Vallis, Princeton Geophysical Fluid Dynamics Lab.
- 1997-1998: Junior Papers on simulating quantum systems via quantum computing (advisor: Dr. Vipul Periwal) and estimating noise in high-energy physics search for Lepton flavor non-conserving decay  $\tau \rightarrow \mu + \gamma$  (advisor: Dr. Daniel Marlow).
- Summer 1997: National Undergraduate Fellowship in Plasma Physics. Worked with Profs. Wendell Horton and Phil Morrison at UT-Austin on maps for particle orbits near a reversal in tokamak q-profile.
- Summer 1996: Research assistant with Prof. Eric Prebys (Princeton) on SLAC Experiment 144 (experimental tests of QED at high field strengths).

## BOOK CHAPTERS

**D J Strozzi**, A B Langdon, E A Williams, A Bers, S J Brunner, “Eulerian-Lagrangian Kinetic Simulations of Laser-Plasma Interactions.” In Eulerian Codes for the Numerical Solution of the Kinetic Equations of Plasmas, edited by M M Shoucri, Nova Science Publishers, Inc. (2011).

## **PUBLICATIONS – PRINCIPAL AUTHOR**

- 1 **D J Strozzi**, H Sio, G B Zimmerman, J D Moody, C R Weber, B Z Djordjević, C A Walsh, B A Hammel, B B Pollock, A Povilus, J P Chittenden, S O’Neil, “Design and modeling of indirectly driven magnetized implosions on the NIF.” Editor’s Pick, invited paper from 2023 APS Division of Plasma Physics meeting. *Phys. Plasmas* **31**, 092703 (2024).
- 2 H Sio, J D Moody, B B Pollock, **D J Strozzi**, D D-M Ho, C A Walsh, G E Kemp, B Lahmann, S O Kucheyev, B Koziowski et al., “Performance scaling with an applied magnetic field in indirect-drive inertial confinement fusion implosions.” *Phys. Plasmas* **30**, 072709 (2023).
- 3 J D Moody, B B Pollock, H Sio, **D J Strozzi**, D D-M Ho, C A Walsh, G E Kemp, B Lahmann, S O Kucheyev, B Koziowski et al., “Increased Ion Temperature and Neutron Yield Observed in Magnetized Indirectly Driven D 2-Filled Capsule Implosions on the National Ignition Facility.” *Phys. Rev. Lett.* **129**, 195002 (2022).
- 4 D P Higginson, **D J Strozzi**, D Bailey, S A MacLaren, N B Meezan, S C Wilks, G Zimmerman, “Understanding and controlling capsule symmetry in near vacuum hohlraums at the National Ignition Facility.” *Phys. Plasmas* **29**, 072714 (2022).
- 5 E E Los, **D J Strozzi**, “Magnetized laser–plasma interactions in high-energy-density systems: Parallel propagation”. *Phys. Plasmas* **29**, 042113 (2022).
- 6 J D Moody, B B Pollock, H Sio, **D J Strozzi**, D D-M Ho, C Walsh, G E Kemp, S O Kucheyev, B Koziowski, E G Carroll, J Kroll, D K Yanagisawa, J Angus, S D Bhandarkar, J D Bude, L Divol, B Ferguson, J Fry, L Hagler, E Hartouni, M C Herrmann, W Hsing, D M Holunga, J Javedani, A Johnson, D Kalantar, T Kohut, B G Logan, N Masters, A Nikroo, N Orsi, K Piston, C Provencher, A Rowe, J Sater, K Skulina, W A Stygar, V Tang, S E Winters, J P Chittenden, B Appelbe, A Boxall, A Crilly, S O’Neill, J Davies, J Peebles, S Fujioka, “The magnetized indirect drive project on the National Ignition Facility.” *J. Fusion Energy* **41**, 7 (2022).
- 7 I N Ellis, **D J Strozzi**, W B Mori, F Li, F R Graziani, “Stopping-power enhancement from discrete particle-wake correlations in high-energy-density plasmas”. *Phys. Rev. E* **104**, 035203 (2021).
- 8 A Colaitis, T Chapman, **D Strozzi**, L Divol, P Michel, “A tessellation-based model for intensity estimation and laser plasma interactions calculations in three dimensions.” *Phys. Plasmas* **25**, 033114 (2018).
- 9 **D J Strozzi**, D S Bailey, P Michel, L Divol, S M Sepke, G D Kerbel, C A Thomas, J E Ralph, J D Moody, M B Schneider, “Interplay of Laser-Plasma Interactions and Inertial Fusion Hydrodynamics.” *Phys. Rev. Lett.* **118**, 025002 (2017).
- 10 W A Farmer, J M Koning, **D J Strozzi**, D E Hinkel, L F Berzak Hopkins, O S Jones, M D Rosen, “Simulation of self-generated magnetic fields in an inertial fusion hohlraum environment.” *Phys. Plasmas* **24**, 052703 (2017).
- 11 G N Hall, O S Jones, **D J Strozzi**, J D Moody, D Turnbull, J Ralph, P A Michel, M Hohenberger, A S Moore, et al., “The relationship between gas fill density and hohlraum drive performance at the National Ignition Facility” *Phys. Plasmas* **24**, 052706 (2017).
- 12 J E Ralph, **D Strozzi**, T Ma, J D Moody, D E Hinkel, D A Callahan, B J MacGowan, P Michel, J L Kline, et al., “Experimental Room Temperature Hohlraum Performance Study on the National Ignition Facility.” *Phys. Plasmas* **23**, 122707 (2016).

- 13 **D J Strozzi**, L J Perkins, M M Marinak, D J Larson, J M Koning, B G Logan, “Imposed magnetic field and hot electron propagation in inertial fusion hohlraums.” *J Plasma Phys.* **81**, 475810603 (2015).
- 14 A P L Robinson, **D J Strozzi**, J R Davies, L Gremillet, J J Honrubia, T Johzaki, R J Kingham, M Sherlock, A A Solodov, “Theory of Fast Electron Transport for Fast Ignition.” *Nucl. Fusion* **54**, 054003 (2014).
- 15 J D Moody, **D J Strozzi**, L Divol, P Michel, H F Robey, S LePape, J Ralph, J S Ross, S H Glenzer, R K Kirkwood, O L Landen, B J MacGowan, A Nikroo, E A Williams, “Raman backscatter as a remote laser power sensor in high-energy-density plasmas.” *Phys. Rev. Lett.* **111**, 025001 (2013).
- 16 **D J Strozzi**, M Tabak, D J Larson, M M Marinak, M H Key, L Divol, A J Kemp, C Bellei, H D Shay, “Cone-Guided Fast Ignition with *no* Imposed Magnetic Fields.” *Eur. Phys. J: Web Conf.* **59**, 03021 (2013).
- 17 **D J Strozzi**, E A Williams, H A Rose, D E Hinkel, A B Langdon, J W Banks, “Characterizing Electron Trapping Nonlinearity in Langmuir Waves.” *Phys. Plasmas* **19**, 112306 (2012).
- 18 I N Ellis, **D J Strozzi**, B J Winjum, F S Tsung, T Grismayer, W B Mori, J E Fahlen, E A Williams, “Convective Raman Amplification of Light Pulses Causing Kinetic Inflation in Inertial Fusion Plasmas.” *Phys. Plasmas* **19**, 112704 (2012).
- 19 **D J Strozzi**, M Tabak, D J Larson, L Divol, A J Kemp, C Bellei, M M Marinak, M H Key, “Fast-ignition transport studies: Realistic electron source, integrated particle-in-cell and hydrodynamic modeling, imposed magnetic fields.” *Phys. Plasmas* **19**, 072711 (2012).
- 20 **D J Strozzi**, D P Grote, M Tabak, B I Cohen, R P J Town, A J Kemp, "Fast ignition transport simulations for NIF" *J Phys.: Conf. Ser.* **244**, 022065 (2010).
- 21 D Bénisti, **D J Strozzi**, L Gremillet, O Morice, “Nonlinear Landau Damping Rate of a Driven Plasma Wave.” *Phys. Rev. Lett.* **103**, 155002 (2009).
- 22 **D J Strozzi**, E A Williams, D E Hinkel, D H Froula, R A London, D A Callahan, "Ray-based calculations of laser backscatter in ICF targets." *Phys. Plasmas* **15**, 102703 (2008).
- 23 D Bénisti, **D J Strozzi**, L Gremillet, "Breakdown of electrostatic predictions for the nonlinear dispersion relation of a stimulated Raman scattering driven plasma wave." *Phys. Plasmas (Letters)* **15**, 030701 (2008).
- 24 **D J Strozzi**, E A Williams, A B Langdon, A Bers, “Kinetic enhancement of Raman backscatter, and electron acoustic Thomson scatter.” *Phys. Plasmas* **14**, 013104 (2007).
- 25 **D J Strozzi**, M M Shoucri, A Bers, E A Williams, A B Langdon, “Vlasov simulations of trapping and inhomogeneity in Raman scattering.” *Journ. Plasma Phys.* **72** part 6, 1299 (2006).
- 26 **D J Strozzi**, M M Shoucri, A Bers. “Study of laser plasma interactions using an Eulerian Vlasov code.” *Computer Phys. Commun.* **164/1-3**, 156 (2004).
- 27 **D J Strozzi**, A K Ram, A Bers, “Coherent acceleration of magnetized ions by electrostatic waves with arbitrary wavenumbers.” *Phys. Plasmas* **10**, 2722 (2003).

## PUBLICATIONS – CONTRIBUTING AUTHOR

- 1 Drew P Higginson, N Izumi, M D Rosen, P Volegov, T Chapman, D N Fittinghoff, K D Hahn, B M Haines, J Jeet, A J Kemp, S Kerr, O L Landen, S MacLaren, A J MacKinnon, J D Moody, A S Moore, B L Reichelt, W M Riedel, D J Schlossberg, **D J Strozzi**, A E Youmans, G Zimmerman, W A Farmer, J S Ross, D E Hinkel, “Direct Evidence of Multispecies Hydrodynamics in Ignition-Scale Hohlraums.” *Phys. Rev. Lett.* **134**, 165101 (2025).

- 2 C A Walsh, **D J Strozzi**, A Povilus, S T O'Neill, L Leal, B Pollock, H Sio, B Hammel, B Z Djordjević, J P Chittenden, J D Moody, "Magnetized ICF implosions: non-axial magnetic field topologies." *Nucl. Fusion* **65**, 036040 (2025).
- 3 S T O'Neill, B D Appelbe, A J Crilly, C A Walsh, **D J Strozzi**, J D Moody, J P Chittenden, "Burn propagation in magnetized high-yield inertial fusion." *Phys. Plasmas* **32**, 022703 (2025).
- 4 R Tommasini, D T Casey, D Clark, A Do, K L Baker, O L Landen, V A Smalyuk, C R Weber, B Bachmann, E Hartouni, S Kerr, S Khan, C Krauland, A L Kritcher, E V Marley, M Millot, J Milovich, R C Nora, A E Pak, D Schlossberg, **D J Strozzi**, B Woodworth, A Allen, S H Baxamusa, T M Briggs; T Fehrenbach, D M Holunga, A Nikroo, C Kong, C Wild, M Stadermann, "High-compression implosions based on high density carbon ablator using modified drive and capsule dopant profiles." *Phys. Plasmas* **32**, 032707 (2025).
- 5 O A Hurricane, A Allen, B L Bachmann, K L Baker, S Baxamusa, S D Bhandarkar, J Biener, S R M Bionta, T Braun, T Briggs, G Brunton, D T Casey, T Chapman, C Choate, D S Clark, E Dewald, J-M DiNicola, L Divol, A Do, T Fehrenbach, D N Fittinghoff, M Gatun Johnson, H Geppert Kleinrath, V Geppert Kleinrath, S Haan, T J Hilsabeck, D E Hinkel, M Hohenberger, K D Humbird, N Izumi, C Kong, A L Kritcher, O L Landen, J Lindl, B J MacGowan, A J Mackinnon, S A Maclaren, M Marinak, R Meeuwesen, P Michel, J Milovich, K Meaney, M Millot, J D Moody, A S Moore, A Nikroo, R Nora, A Pak, J E Ralph, M Ratledge, J S Ross, M S Rubery, D J Schlossberg, P F Schmit, S M Sepke, V Smalyuk, B K Spears, P T Springer, M Stadermann, **D J Strozzi**, T I Suratwala, R Tommasini, R P J Town, C R Weber, C Wild, B Van Wonterghem, B Woodworth, J Wu, C V Young, A B Zylstra, "Present understanding of ignition and gain using indirect-drive inertial confinement fusion target designs on the U.S. National Ignition Facility." *Plasma Phys. Control. Fusion* **67**, 015019 (2025).
- 6 A L Kritcher, D J Schlossberg, C V Young, R Tommasini, J E Ralph, E Dewald, H Sio, C R Weber, V Smalyuk, L Divol, R Merlo, O A Hurricane, O L Landen, A Allen, B Bachmann, K L Baker, S Baxamusa, J Biener, T Braun, G Brunton, D A Callahan, D T Casey, T Chapman, C Choate, D S Clark, J-M G Di Nicola, M J Edwards, S Haan, T Fehrenbach, S Hayes, D E Hinkel, M Hohenberger, K Humbird, E Kur, B Kustowski, C Kong, D Larson, X Lepro-Chavez, J D Lindl, B J MacGowan, S Maclaren, A Macphee, M Marinak, J Milovich, A Nikroo, R Nora, A Pak, P K Patel, M Ratledge, M S Rubery, P Schmit, S M Sepke, M Stadermann, **D J Strozzi**, T I Suratwala, R Town, B Woodworth, B Van Wonterghem, C Wild, A B Zylstra, "Progress on fusion target gain using 2.2 MJ of laser energy at the National Ignition Facility." *High Power Lasers for Fusion Research VIII, Proc. of SPIE* **13343**, 1334303 (2025).
- 7 H Abu-Shawareb **et al.** (Indirect Drive ICF Collaboration), "Achievement of Target Gain Larger than Unity in an Inertial Fusion Experiment." *Phys. Rev. Lett.* **132**, 065102 (2024).
- 8 A L Kritcher, A B Zylstra, C R Weber, O A Hurricane, D A Callahan, D S Clark, L Divol, D E Hinkel, K Humbird, O Jones, J D Lindl, S Maclaren, **D J Strozzi**, C V Young *et al.*, "Design of the first fusion experiment to achieve target energy gain  $G > 1$ ." *Phys. Rev. E* **109**, 025204 (2024).
- 9 A L Kritcher, D J Schlossberg, C R Weber, C V Young, O A Hurricane, E Dewald, A B Zylstra, A Allen, B Bachmann, K L Baker, S Baxamusa, T Braun, G Brunton, D A Callahan, D T Casey, T Chapman, C Choate; D S Clark, J-M G Di Nicola; L Divol, M J Edwards; S Haan, T Fehrenbach, S Hayes, D E Hinkel, M Hohenberger, K Humbird, N Izumi, O Jones; E Kur, B Kustowski, C Kong, O L Landen, D Larson, X Lepro-Chavez, J D Lindl, B J MacGowan, S Maclaren, M Marinak, P Michel, M Millot, A Nikroo, R Nora, A Pak; P K Patel, J E Ralph, M Ratledge; M S Rubery, N W Ruof, S M Sepke, M Stadermann, **D J Strozzi**, T I Suratwala; R Tommasini, R Town, B Woodworth, B Van Wonterghem, C Wild, "Design of first experiment to achieve fusion target gain  $> 1$ ." *Phys. Plasmas* **31**, 070502 (2024).
- 10 M Sherlock, P Michel, **D J Strozzi**, L Divol, E Kur, G Zimmerman, "Inverse bremsstrahlung absorption rate for super-Gaussian electron distribution functions including plasma screening." *Phys. Rev. E* **109**, 055201 (2024).
- 11 D Turnbull, J Katz, M Sherlock, A L Milder, M S Cho, L Divol, N R Shaffer, **D J Strozzi**, P Michel, D H Froula, "Reconciling calculations and measurements of inverse bremsstrahlung absorption." *Phys. Plasmas* **31**, 063304 (2024).

- 12 C A Walsh, D J Strozzi, H Sio, B B Pollock, B D Appelbe, A J Crilly, S O'Neill, C Weber, J P Chittenden, J D Moody, "Resistive diffusion in magnetized ICF implosions: Reduced magnetic stabilization of the Richtmyer-Meshkov instability." *High Energy Density Phys.* **51**, 101103 (2024).
- 13 W A Farmer, C Ruyer, J A Harte, D E Hinkel, D S Bailey, E Kur, O L Landen, N Lemos, P A Michel, J D Moody, **D J Strozzi**, C R Weber, G B Zimmerman, "Impact of flow-induced beam deflection on beam propagation in ignition scale hohlraums." *Phys. Plasmas* **31**, 022705 (2024).
- 14 K L Baker, P A Amendt, D A Mariscal, H Sio, O L Landen, D D Ho, V A Smalyuk, J D Lindl, J S Ross, L Aghaian, A Allen, N Aybar, N W Birge, D T Casey, P M Celliers, H Chen, T Fehrenbach, D Fittinghoff, H Geppert-Kleinrath, V Geppert-Kleinrath, S H Glenzer, S W Haan, D E Hinkel, S F Khan, C Kong, A L Kritcher, M Millot, J L Milovich, A Nikroo, R C Nora, A Pak, Y Ping, J E Ralph, M Ratledge, N Roskopf, M S Rubery, M Stadermann, **D J Strozzi**, C Wild, B N Woodworth, C V Young, "Frustrum 1100 experimental campaign on the National Ignition Facility." *High Energy Density Phys.* **53**, 101158 (2024).
- 15 A Do, D T Casey, D S Clark, B Bachmann, K L Baker, T Braun, T M Briggs, T D Chapman, P M Celliers, H Chen, C Choate, E L Dewald, L Divol, G Fathi, D N Fittinghoff, G N Hall, E Hartouni, D M Holunga, S F Khan, A L Kritcher, O L Landen, A G MacPhee, M Millot, E V Marley, J L Milovich, A Nikroo, A E Pak, D J Schlossberg, V A Smalyuk, M Stadermann, **D J Strozzi**, R Tommasini, C R Weber, B N Woodworth, D K Yanagisawa, N W Birge, C R Danly, M Durocher, M S Freeman, H Geppert-Kleinrath, V Geppert-Kleinrath, Y Kim, K D Meaney, C H Wilde, M Gatu-Johnson, A Allen, M Ratledge, C Kong, T Fehrenbach, C Wild, "Measurements of improved stability to achieve higher fuel compression in ICF." *Phys. Plasmas* **30**, 112703 (2023).
- 16 K L Baker, P A Amendt, J S Ross, V A Smalyuk, O L Landen, D D Ho, S Khan, S W Haan, J D Lindl, D Mariscal, J L Milovich, S MacLaren, Y Ping, **D J Strozzi**, R M Bionta, D T Casey, P M Celliers, D N Fittinghoff, H Geppert-Kleinrath, V Geppert-Kleinrath, K D Hahn, M Ga, "First large capsule implosions in a frustum-shaped hohlraum." *Phys. Plasmas* **30**, 092708 (2023).
- 17 N A Lopez, E Kur, **D J Strozzi**, "Intensity of focused waves near turning points." *Phys. Rev. E* **107**, 055204 (2023).
- 18 D Turnbull, J Katz, M Sherlock, L Divol, N R Shaffer, **D J Strozzi**, A Colaïtis, D H Edgell, R K Follett, K R McMillen et al., "Inverse Bremsstrahlung Absorption." *Phys. Rev. Lett.* **130**, 145103 (2023).
- 19 K L Baker, C A Thomas, O L Landen, S Haan, J D Lindl, D T Casey, C Young, R Nora, O A Hurricane, D A Callahan, O Jones, et al., "Reaching a burning plasma and ignition using smaller capsules / Hohlraums, higher radiation temperatures, and thicker ablator/ice on the National Ignition Facility." *Phys. Plasmas* **30**, 032702 (2023).
- 20 B B Pollock, C Goyon, A B Sefkow, M E Glinsky, K J Peterson, M R Weis, E G Carroll, J Fry, K Piston, A J Harvey-Thompson, S B Hansen, K Beckwith, D J Ampleford, E R Tubman, **D J Strozzi**, J S Ross, J D Moody, "Experimental demonstration of > 20 kJ laser energy coupling in 1-cm hydrocarbon-filled gas pipe targets via inverse Bremsstrahlung absorption with applications to MagLIF." *Phys. Plasmas* **30**, 022711 (2023).
- 21 K L Baker, S MacLaren, O Jones, B K Spears, P K Patel, R Nora, L Divol, O L Landen, G J Anderson, J Gaffney, M Kruse, O A Hurricane et al., "Alpha heating of indirect-drive layered implosions on the National Ignition Facility." *Phys. Rev. E* **107**, 015202 (2023).
- 22 A Colaïtis, D Edgell, I Igumenshchev, D Turnbull, **D J Strozzi**, T Chapman, V Goncharov, D H Froula, "3D simulations of inertial confinement fusion implosions part 1: inline modeling of polarized cross beam energy transfer and subsequent drive anomalies on OMEGA and NIF." *Plasma Phys. Control. Fusion* **65**, 014003 (2022).

- 23 J E Ralph, P Michel, B J MacGowan, **D J Strozzi**, N B Meezan, J-M Di Nicola, J E Heebner, V J Hernandez, L Pelz, S Yang, N Lemos, L Divol, A Kemp, T Chapman, S F Khan, O L Landen, J D Moody, R P J Town, M J Edwards, "Optimization of Backscatter and Symmetry for Laser Fusion Experiments Using Multiple Tunable Wavelengths." *Phys. Rev. Appl.* **18**, 044040 (2022).
- 24 L B Bayu Aji, A M Engwall, S J Shin, J H Bae, A A Baker, **D J Strozzi**, S K McCall, J D Moody, S O Kucheyev, "Combinatorial sputter deposition of ultrathick Au-Bi alloy films." *J. Phys. D: Appl. Phys.* **55**, 485302 (2022).
- 25 H Abu-Shawareb **et al.** (Indirect Drive ICF Collaboration), "Lawson Criterion for Ignition Exceeded in an Inertial Fusion Experiment." *Phys. Rev. Lett.* **129**, 075001 (2022).
- 26 A L Kritcher, A B Zylstra, D A Callahan, O A Hurricane, C R Weber, D S Clark, C V Young, J E Ralph, D T Casey, A Pak, O L Landen, B Bachmann **et al.**, "Design of an inertial fusion experiment exceeding the Lawson criterion for ignition." *Phys. Rev. E* **106**, 025201, (2022).
- 27 A B Zylstra, A L Kritcher, O A Hurricane, D A Callahan, J E Ralph, D T Casey, A Pak, O L Landen, B Bachmann, K L Baker, L Berzak Hopkins **et al.**, "Experimental achievement and signatures of ignition at the National Ignition Facility." *Phys. Rev. E* **106**, 025202 (2022).
- 28 A L Kritcher, C V Young, H F Robey, C R Weber, A B Zylstra, **et al.**, "Design of inertial fusion implosions reaching the burning plasma regime." *Nat. Phys. (Letters)* **18**, 251 (2022).
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#### INVITED CONFERENCE PRESENTATIONS

- 1 **D J Strozzi**, C A Walsh, B Z Djordjević, J D Moody, H Sio, B A Hammel, B B Pollock, G B Zimmerman, A Povilus, J P Chittenden, S O'Neill, "Finding the Best Uses of Imposed Magnetic Fields to Improve Indirect Drive Inertial Confinement Fusion." Talk UI10.3, 65<sup>th</sup> APS Div. Plasma Physics, Denver, CO; 2 Nov. 2023.

- 2 **D J Strozzi**, S M Sepke, D S Bailey, P Michel, L Divol, G D Kerbel, C A Thomas, “Inline Modeling of Cross-Beam Energy Transfer and Raman Scattering in NIF Hohlraums.” Talk, 46<sup>th</sup> Anomalous Absorption Conf., Old Saybrook, CT; 3 May 2016
- 3 **D J Strozzi**, M Tabak, D J Larson, M M Marinak, M H Key, L Divol, A J Kemp, C Bellei, H D Shay, “Cone-Guided Fast Ignition with Imposed Magnetic Fields.” Inertial Fusion Sciences and Applications, Bordeaux, France; 13 Sep. 2011.

### CONTRIBUTED CONFERENCE PRESENTATIONS

- 1 D J Strozzi, M Sherlock, L Divol, N R Shaffer, D Turnbull, L G Stanton, M S Murillo, J A Harte, D S Bailey, G B Zimmerman, S M Sepke, “General-Purpose Model of Laser Absorption for Radiation-Hydrodynamic Simulation.” CEA-LLNL Post-DPP Workshop, Atlanta, GA; 10 Oct. 2024.
- 2 D J Strozzi, B Bocklund, L B Bayu Aji, S O Kucheyev, M D Rosen, M V Patel, P A Sterne, “Novel High-Entropy Alloys (HEAs) for Inertial Fusion Hohlraums.” Talk TO04.15, 65<sup>th</sup> APS Div. Plasma Physics, Atlanta, GA; 10 Oct. 2024.
- 3 D J Strozzi, M Sherlock, L Divol, N R Shaffer, D Turnbull, L G Stanton, M S Murillo, J A Harte, D S Bailey, G B Zimmerman, S M Sepke, “General-Purpose Model of Laser Absorption for Radiation-Hydrodynamic Simulation.” 52<sup>nd</sup> Anomalous Absorption Conference, Big Sky, MT; 11 June 2024.
- 4 D J Strozzi, D S Bailey, T Chapman, L Divol, W A Farmer, J A Harte, E Kur, M M Marinak, P Michel, M D Rosen, S M Sepke, M Sherlock, C Young, G B Zimmerman, “Laser-Plasma Interaction Modeling in LLNL Radiation-Hydrodynamic Codes.” 52<sup>nd</sup> Anomalous Absorption Conference, Big Sky, MT; 11 June 2024.
- 5 D J Strozzi, B Z Djordjević, C A Walsh, H Sio, A Povilus, J D Moody, G B Zimmerman, C R Weber, A Lumbard, S O’Neill, J Chittenden, “Exploring Axial and Other Imposed Magnetic Fields to Improve Layered Hohlraum-Driven Implosions.” 51<sup>st</sup> Anomalous Absorption Conference, Mammoth Lakes, CA; 21 June 2023.
- 6 D J Strozzi, G B Zimmerman, J D Moody, H Sio, C A Walsh, D D Ho, B B Pollock, C R Weber, G E Kemp, “Modeling the First Magnetized NIF Hohlraum Implosions.” Talk UO04.3, 64<sup>th</sup> APS Div. Plasma Physics, Spokane, WA; 20 Oct. 2022.
- 7 D J Strozzi, G B Zimmerman, J D Moody, H Sio, C A Walsh, D D Ho, B B Pollock, C R Weber, G E Kemp, “Modeling the First Magnetized NIF Hohlraum Implosions.” 50<sup>th</sup> Anomalous Absorption Conference, Skytop, PA; 9 June 2022.
- 8 D J Strozzi, J D Moody, B B Pollock, H Sio, G B Zimmerman, D D Ho, S O Kucheyev, C A Walsh, B G Logan, G E Kemp, “First Magnetized Hohlraum-Driven Implosions on the NIF.” Talk UO04, 62<sup>nd</sup> APS Div. Plasma Physics, Pittsburgh, PA; 11 Nov. 2021.
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- 13 D J Strozzi, A Colaitis, D S Bailey, R L Berger, P Michel, D T Woods, O S Jones, “Cross-Beam Energy Transfer (CBET) and Stimulated Brillouin Scattering (SBS) in NIF Hohlraums.” Talk CO6.3, 59th APS Div. Plasma Physics, Portland, OR; 5 Nov. 2018.

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- 21 D J Strozzi, J M Koning, L J Perkins, M M Marinak, D J Larson, B G Logan, "Ignition Hohlraum Simulations with Imposed Magnetic Field, and Effect on Hot Electrons." Poster, Inertial Fusion Sciences and Applications, Bellevue, WA, 22 Sep. 2015.
- 22 D J Strozzi, L J Perkins, M A Rhodes, B G Logan, D D Ho, G B Zimmerman, S A Hawkins, D T Blackfield, "Application of Imposed Magnetic Fields to Ignition and Thermonuclear Burn on the National Ignition Facility." Poster, 45<sup>th</sup> Anomalous Absorption Conf., Ventura Beach, CA; 16 June 2015.
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- 25 D J Strozzi, S M Sepke, G D Kerbel, P Michel, M M Marinak, O S Jones, "Inline Cross-Beam Energy Transfer and Backscatter in Hohlraum Simulations." Talk, 44<sup>th</sup> Anomalous Absorption Conf., Estes Park, CO; 9 June 2014.
- 26 D J Strozzi, J E Ralph, T Ma, D E Hinkel, D A Callahan, J L Kline, J D Moody, O Jones, J R Rygg, G D Kerbel, M M Marinak, S H Glenzer, "Room-temperature, ignition-scale hohlraum experiments on NIF" Talk UO4.11, 55th APS Div. Plasma Physics, Denver, CO; 14 Nov. 2013.
- 27 D J Strozzi, D E Hinkel, J E Ralph, T Ma, D A Callahan, J L Kline, J D Moody, O Jones, J R Rygg, "NIF Hohlraum Experiments at Room Temperature, a.k.a. Warm Shots." Talk, 43<sup>rd</sup> Anomalous Absorption Conf., Stevenson, WA; 11 July 2013.
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- 33 D J Strozzi, M Tabak, D J Larson, M M Marinak, M H Key, L Divol, A J Kemp, H D Shay, "Cone-Guided Fast Ignition with Imposed Magnetic Fields." Talk, 41st Anomalous Absorption Conf., San Diego, CA; 24 June 2011.
- 34 D J Strozzi, D E Hinkel, E A Williams, R P J Town, P A Michel, L Divol, R L Berger, J D Moody, "Understanding Raman Scattering in NIF Ignition Experiments." Poster, 41st Anomalous Absorption Conf., San Diego, CA; 20 June 2011.
- 35 D J Strozzi, M Tabak, A J Kemp, L Divol, D Larson, M Marinak, D P Grote, M H Key, D R Welch, B I Cohen, R P J Town, "Electron-driven fast ignition modeling with realistic electron source." Talk CO6.6, APS Div. Plasma Physics, Chicago, IL; 8 Nov. 2010.
- 36 D J Strozzi, M Tabak, A J Kemp, L Divol, D P Grote, M H Key, D R Welch, B I Cohen, R P J Town, "Modeling of electron-driven fast ignition at ignition scale." 40th Anomalous Absorption Conf., Snowmass, CO; 16 June 2010.
- 37 D J Strozzi, M Tabak, D P Grote, B I Cohen, H D Shay, R P J Town, A J Kemp, M Key, "Transport simulations for fast ignition on NIF" Talk N05.5, APS Div. Plasma Physics, Atlanta, GA; 4 Nov. 2009.
- 38 D J Strozzi, D P Grote, M Tabak, R P J Town, A J Kemp, "Electron transport simulations for fast ignition on NIF" Poster 3.10.017, Inertial Fusion Sciences and Applications, San Francisco, CA; 9 Sep. 2009.
- 39 D J Strozzi, M Tabak, R P J Town, D P Grote, A J Kemp, "Electron transport simulations for fast ignition on NIF" Poster WP13, 39th Anomalous Absorption Conf., Bodega Bay, CA; 19 June 2009.
- 40 D J Strozzi, E A Williams, D E Hinkel, H A Rose, "Role of Electron Trapping in SRS on NIF Ignition Targets." Talk F04, 39th Anomalous Absorption Conf., Bodega Bay, CA; 19 June 2009.
- 41 "Ray-based calculations with DEplete of laser backscatter in ICF targets." Poster P1-8, 38th Anomalous Absorption Conf., Williamsburg, VA; 2 June 2008.
- 42 "Assessing risk of plasma-wave trapping nonlinearities in stimulated Raman scattering." Talk 23, 38th Anomalous Absorption Conf., Williamsburg, VA; 4 June 2008.
- 43 "Kinetic modeling of Raman scattering with adiabatic electron response." Talk NO6.6, APS Div. Plasma Physics, Orlando, FL; 14 Nov. 2007.
- 44 "DEplete - a code for rapid assessment of backscatter activity." Talk, 37th Anomalous Absorption Conf., Maui, HI; 27 Aug. 2007.
- 45 "Stimulated Raman backscatter leading to electron acoustic Thomson scatter." Poster UP1.00107, APS Div. Plasma Physics, Philadelphia, PA; 2 Nov. 2006.
- 46 "Vlasov simulations of kinetically-enhanced Raman backscatter and electron acoustic Thomson scattering." Talk and poster, 36th Anomalous Absorption Conf., Jackson Hole, WY; 5-9 June 2006.

- 47 "Vlasov simulations of Raman scattering: kinetic enhancement and stimulated electron acoustic scatter." Talk BO1.00011, APS Div. Plasma Physics, Denver, CO; 24 Oct. 2005.
- 48 "Vlasov simulations of trapping and inhomogeneity in Raman scattering." Poster P2-78, 19th International Conf. on Numerical Simulation of Plasmas, Nara, Japan; 12-15 July 2005.
- 49 "Interplay of electron trapping and inhomogeneity in Raman scattering." Poster RP14, 35th Anomalous Absorption Conf., Fajardo, Puerto Rico; 30 June 2005.
- 50 "Interplay of trapping and density gradients in Raman scattering." Talk FO1.005, APS Div. Plasma Physics, Savannah, GA, 16 Nov. 2004. Bulletin of the APS, 49, No 8.
- 51 "Kinetic simulations of SRS saturation." Poster 4P17, 34th Anomalous Absorption Conf., Gleneden Beach, OR; 6 May 2004.
- 52 "Kinetic simulation of laser-plasma interactions." Poster BP1, APS Div. Plasma Physics, Albuquerque, NM; 27 Oct. 2003. Bulletin of the APS, 48, No 7.
- 53 "Study of laser plasma interactions using an Eulerian Vlasov code." Poster 113, 18th International Conf. on Numerical Simulation of Plasmas, Falmouth, MA; 8 Sep. 2003.
- 54 "Coherent particle energization by electrostatic waves." Poster 2C27, Sherwood Meeting, Corpus Christi, TX; 29 April 2003.
- 55 "Coherent and stochastic motion of ions in two oblique electrostatic waves." Poster CP1.28, APS Div. Plasma Physics, Orlando, FL; 11 Nov. 2002. Bulletin of the APS, 47, No 9.
- 56 "Coherent and stochastic particle motion in a uniform magnetic field and oblique electrostatic waves." Poster 2C48, Sherwood Meeting, Rochester; NY, 23 April 2002.
- 57 "Stochastic particle motion due to multiple electrostatic waves." Poster QP1.96, APS Div. of Plasma Physics, Long Beach, CA; 1 Nov. 2001. Bulletin of the APS, 46, No 8.
- 58 "Collisionless Hall-MHD modeling near a magnetic null." Poster WP1-6, APS Div. of Plasma Physics, Québec City, Canada; 26 Oct. 2000. Bulletin of the APS, 45, No 7.
- 59 D Strozzi, P J Morrison, W Horton, "Reversed Shear Transport Barrier Map." Poster pThpP1.29, APS Div. of Plasma Physics, Pittsburgh, PA; 20 Nov. 1997.

### **STUDENT EMPLOYMENT**

- Summer 1999: Intern at the Association to Benefit Children, a non-profit educational and human services group in New York City. Helped establish their computer network and Internet access.
- 1995 - 1999: Consultant, Princeton Computing Heldesk. Helped users with computer problems. Lead the data recovery team, 1998 – 1999.

### **ACTIVITIES**

- 2001-2002: Organized weekly plasma graduate student forums at MIT
- 2005: MIT High School Studies Program – taught Saturday course on fusion and nuclear physics for Boston-area high school students, for two semesters.
- 2009-2010: Stanford Splash: taught one-weekend class on fusion to high school students.

### **SKILLS**

- Analytic plasma-physics theory
- Extensive numerical experience with C, Fortran, Matlab, Python and Yorick

- Using and writing serial and parallel physics simulation codes
- French