

Curriculum Vitae

Jason T. Cassibry

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EDUCATION

Ph. D., Mechanical Engineering, University of Alabama in Huntsville, May 2004

M.S., Aerospace Engineering, University of Illinois in Urbana/Champaign, May 1999

B.S., Aerospace Engineering, University of Missouri in Rolla, May 1997

PROFESSIONAL EXPERIENCE

- September 2012 to present: Associate Professor in the Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville.
- September 2006 to August 2012: Assistant Professor (tenure track) in the Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville.
- October 2004 to September 2006: Assistant Research Professor, Propulsion Research Center, Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville.
- October 2003 to October 2004: Research Engineer, Propulsion Research Center, Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville.
- August 1999 to October 2003, Graduate Research Assistant, Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville.
- June 1997 to June 1999, Graduate Research Assistant, Department of Aeronautical and Astronautical Engineering, University of Illinois in Urbana/Champaign.
- June 1994 to May 1997, Undergraduate Research Assistant, Department of Mechanical and Aerospace Engineering and Engineering Mechanics, University of Missouri in Rolla.

HONORS AND AWARDS

As Faculty

1. AIAA Best Paper by the AIAA Nuclear and Future Flight Propulsion Technical Committee (2nd author), AIAA 2014-3520 “Developing the Pulsed Fission-Fusion (PuFF) Engine” (awarded April 2014)
2. SciQuest 2013 Quest for Excellence Award in the area of Academia, August 2013.
3. Konrad Dannenberg Educator of the Year Award, May 2013, in recognition by the Greater Huntsville Section of AIAA of outstanding service to education and promotion of math and science within the community.
4. UAHuntsville Distinguished Research Award, May 2010, in recognition of outstanding contributions in research. Award is competed among all faculty.
5. Outstanding Junior Professor for College of Engineering, February 2010, in recognition of outstanding contributions in both research and teaching as an assistant professor.

As Student

1. 2003 Mechanical and Aerospace Engineering Graduate Student of the Year
2. Membership in Phi Kappa Phi, Tau Beta Pi, Sigma Gamma Tau
3. Who's Who Among American Engineering Students

4. National Collegiate Engineering Award
5. All-American Scholar Collegiate Award
6. Academy of Mechanical Engineers Scholarship
7. Eagle Scout

PROFESSIONAL AFFILIATIONS

- American Institute of Aeronautics and Astronautics, Lifetime Associate Fellow
- American Physical Society, Member
- National Space Club Huntsville
- Phi Kappa Phi

PROFESSIONAL ACTIVITIES: TECHNICAL CONSULTING

- Advisor for MHD implementation into multiphysics tool package designed for propulsion system evaluation, Marshall Space Flight Center, 2004-2006.

TEACHING

Courses

Summary: 13 unique classes taught, with all time normalized SIE score of 95.37% with 3.74% standard deviation.

FYE 101 Charger Success-Engineering

Composite teacher evaluation scores: 3.53/4.0 (Fall 2015)

MAE 310 Fluid Mechanics I

Composite teacher evaluation scores: 93.73% (Fall 2009), 3.91/4.0 (Spring 2016), 4.77/5.0 (Spring 2017), 4.83/5.0 (Spring 2019), 4.82/5.0 (Spring 2020)

MAE 341 Thermodynamics I

Composite teacher evaluation scores: 86.3% (Fall 2006), 95.64% (Spring 2014), 4.80/5.0 (Fall 2020)

MAE 342 Thermodynamics II

Composite teacher evaluation scores: 88.0% (Fall 2007), 92.40% (Spring 2008), 88.75% (Fall 2008), 95.27% (Spring 2009), 95.99% (Fall 2009), 95.02% (Spring 2010).

MAE 343 (Formerly 420/520) Compressible Aerodynamics

As MAE 343, Composite teacher evaluation scores: 4.9/5.0 (Spring 2019)

As MAE 420, Composite teacher evaluation scores: 96.46 (Spring 2011), 97.48 (Spring 2012), 97.6 (Spring 2013), 97.4 (Spring 2014), and 97.4 (Spring 2015).

As MAE 520, Composite teacher evaluation scores: 97.04 (Spring 2011), 99.26 (Spring 2012), 100 (Spring 2013), 97.08 (Spring 2014), and 97.08 (Spring 2015).

MAE 441/541 Airbreathing Propulsion

As MAE 441, Composite teacher evaluation scores: 96.41% (Fall 2012), 96.98% (Fall 2013), 97.22%, (Fall 2014 no data), 4.82/5.0 (Fall 2016), 4.91/5.0 (Fall 2017), 4.91/5.0 (Fall 2018), 4.83 (Fall 2019)

As MAE 541, Composite teacher evaluation scores: 96.05% (Fall 2012), 96.25% (Fall 2013), 82.24%, (Fall 2014, (Fall 2016, insufficient responses), 4.91/5.0 (Fall 2017), 4.91/5.0 (Fall 2018), 4.83 (Fall 2019)

MAE 468/568 Elements of Spacecraft Design

As MAE 468, Composite teacher evaluation scores: 3.8/4.0 (Spring 2015)

As MAE 568, Composite teacher evaluation scores: 4.0/4.0 (Spring 2015)

MAE 444/544 (formerly 495/595) Introduction to Electric Propulsion

Developed course, was approved by the college as MAE 444/544

As MAE 495/595, Composite teacher evaluation scores: 94.9% (Spring 2005) and ~95% (Spring 2008)

As MAE 444, Composite teacher evaluation scores: 99.25% (Spring 2010)

As MAE 544, Composite teacher evaluation scores: 91.33% (Spring 2010)

MAE 620 Compressible Flow

4.86/5.0 (Spring 2018)

MAE 740 Aerothermodynamics

Composite teacher evaluation scores: 88.0% (Spring 2007), 95.28% (Spring 2009), and 97.41% (Spring 2011).

MAE 754 Hypersonics

Composite teacher evaluation scores: 89.44% (Fall 2008), 95.62% (Fall 2012), (no data Fall 2014), 5.0/5.0 (Fall 2016), 5.0/5.0 (Fall 2018)

MAE 795 Magneto hydrodynamics

Composite teacher evaluation scores: 93.33% (Fall 2009), 98.33 (Spring 2012).

MAE 795 ST: Fusion Propulsion

Composite teacher evaluation scores: 95.40% (Fall 2011), 93.93% (Fall 2013), 4.38/5 (Fall 2015), 4.8/5.0 (Fall 2019)

Advising and Mentoring Students

1. Ph.D Students Graduated (6)

- a) John Stutz, "Modeling and Evaluation of Ballistic Trajectories for Projectiles Launched from Electromagnetic Railguns," Ph.D Mechanical Engineering, May 2013.
- b) Milos Stanic, "Effects of Plasma Jet Parameters, Ionization, Thermal conduction, and Radiation on Stagnation Conditions of an Imploding Plasma Liner," PhD Mechanical and Aerospace Engineering, May 2013.
- c) Ross Cortez, "Fusion yield scaling on deuterium frozen fibers with long rise time current, Ph.D. MAE, December 2018.
- d) Kevin Schillo, "Three-Dimensional Modeling of Fusion Yield in Plasma-Jet Driven Magneto-Inertial Fusion," Ph.D. MAE, May 2019.
- e) Seth Thompson, Smoothed Particle Magnetohydrodynamic Modeling of Plasma Jets Driven Magnetoinertial Fusion, Ph.D Mechanical and Aerospace Engineering, Ph.D. MAE, May 2020.
- f) Tyler Englestad, "Three dimensional modeling of surface vibrations in hypersonic flows," Ph.D MAE, December 2019.

2. M.S. Students Graduated (19)

- a) Brian Peters, Magnetic Field Penetration and Enhanced Diffusion in Pulsed Plasma Thrusters, M.S. Mechanical and Aerospace Engineering, December 2005.
- b) Branwen Schuettpelz, Examination of Faraday Probe Measurements and Plasma Conditions Supporting Detachment, M.S. Mechanical and Aerospace Engineering, December 2006.
- c) Seth Thompson, Lindl-Widner Diagrams for Plasma Liner Driven Magneto-Inertial Fusion, M.S. Mechanical and Aerospace Engineering, May 2007.
- d) Kjell-Edmund Ims, Integration of a Magnetic Bias Field Coil in a Plasmoid Thruster, M.S. Mechanical and Aerospace Engineering, December 2008.
- e) Andre Turner, Mission Analysis using Experimental Results from an 8-cm Ion Thruster, M.S. Mechanical and Aerospace Engineering, August 2008.
- f) Nilesh Dhote, Ignition and Implosion Studies of Plasma-Driven Magnetoinertial Fusion, M.S. Physics Department, expected graduation date May 2009.
- g) Coby McColgin, Magnetic Field Mapping in the Plasmoid Thruster Experiment, M.S.

Mechanical and Aerospace Engineering, May 2010.

- h) Brittany Anne Dowell, Numerical Analysis of a Plasmoid Thruster, M.S. Mechanical and Aerospace Engineering, Defended Spring 2007, fulfilled corrections to thesis December 2010, course validation December 2010, May 2011.
- i) Ross Cortez, Initial Design Process for a Pulsed Thermonuclear Fusion Reaction Engine, M.S. Mechanical and Aerospace Engineering, August 2011.
- j) Emily Mattox¹, Carbon Dioxide Removal System for Closed Loop Atmosphere Revitalization, Candidate Sorbents Screen and Test Results, M.S. Mechanical and Aerospace Engineering, May 2012.
- k) Igor Savin², Statistical Fracture Mechanics: an Unconventional Approach to Crack Formation in Brittle Solids, M.S. Mechanical and Aerospace Engineering, August 2012.
- l) Brian Riehm, Mission Design for Flexible Path Exploration utilizing fusion propulsion, M.S. Mechanical and Aerospace Engineering, August 2012.
- m) Lloyd Jackson, Three-Dimensional Model of a Plasma Railgun Using Smoothed Particle Hydrodynamics, M.S. Mechanical and Aerospace Engineering, May 2014.
- n) Kevin Schillo, Three-Dimensional Modeling of an Ideal Nozzle for Advanced Propulsion, M.S. Mechanical and Aerospace Engineering, May 2014.
- o) Rachael Agnew, Analytic Model to Estimate Thermonuclear Neutron Yield in Z-pinches using the Magnetic Noh Problem, M.S. Mechanical and Aerospace Engineering, May 2014.
- p) Laura Barkett, "Thermal Design and Modelling of Capillary Channels for a Nuclear Thermal Propulsion System," M.S. Mechanical and Aerospace Engineering, August 2014.
- q) Amit Patel, "Magnetically Levitating Low-Friction Test Stand for the Evaluation of Micro-thrusters," M.S. Mechanical Engineering, December 2015.
- r) Saroj Kumar, "High Fidelity Spacecraft Trajectories Analysis for Fusion Propulsion Based Science Missions to the Outer Gas Giant Planets," December 2018.
- s) David Hewitt, Neutron and X-ray Shielding Criteria for Crew and Plasma Facing Components for a Fusion Propulsion Vehicle, M.S. May 2020.

3. Undergraduate Students with Thesis (3)

- a) Chris Wordingham, "Acceleration of Smooth Particle Hydrodynamic Plasma Simulations via GPU Computing," Honor's Thesis for B.S. in Mechanical and Aerospace Engineering, May 2012.
- b) Lindsey Blair, "Scaling of Matlab on High Performance Computing Systems," Honor's Thesis for B.S. in Mechanical and Aerospace Engineering, December 2013.
- c) Steven Doyle, "Comparison of radiation dosage for human piloted Mars missions using chemical, nuclear thermal, and fusion propulsion systems," Honor's Thesis for B.S. in Aerospace Engineering, December 2014.

4. Current Students

- a) PhD (7)
 - Mitchell Rodriguez, Three dimensional modeling of electrode erosion for pulsed z-pinch fusion, Ph.D. Mechanical and Aerospace Engineering, expected graduation May 2021.
 - Bryan Winterling, Smooth Particle Modeling of liquid state z-pinch fusion targets, expected graduation May 2021.
 - Nathan Schilling, Augmenting a 3D Plasma Code to Study Pulsed Magnetic Nozzles for Advanced Propulsion, expected graduation May 2022.
 - Regan Tackett, Aerospace applications of multidimensional scattered data, interpolation/classification using radial basis functions and metaheuristic algorithms, Ph.D Mechanical and Aerospace Engineering, expected graduation May 2021.

¹ Assumed position of chair of committee on behalf of Dr. Dawn Bardot, Ms. Mattox thesis advisor.

² Assumed position of chair after draft of thesis had already been written.

- Brian Taylor, “Effects of initial conditions on ignition for pulsed fission fusion hybrid targets for propulsion,” expected graduation date of May 2021.
 - Pongkrit “Boom” Darakorn, “Dielectrophoretic Force Fields for Confining Cryogenic Rocket Propellants,” expected graduation data of Spring 2022.
 - Saroj Kumar, “Studies in nuclear thermal propulsion mission architectures for deep space exploration,” expected graduation date Spring 2022
- b) Master's (2)
- Jacob Kinsey, “Neutron measurements in 3D printed targets driven by a 60 kJ pulsed power system,” expected graduation date Fall 2021.
 - Sarah Salverson (Dabbs), “Rain droplet demise modeling in shock waves, expected graduation date Fall 2021.

5. Graduate Student Committees

- a) William Hankins (M.S. MAE 2021)
- b) Miles Owen (PhD MAE 2021)
- c) Austin Click (M.S. MAE 2020)
- d) Michael Sampson (M.S. MAE 2020)
- e) Joshua Grumbach (M.S. MAE 2020)
- f) Victor Lopez (M.S. MAE 2019)
- g) Will Bickett (M.S. MAE 2019)
- h) Dakota Harring (Ph.D. MAE 2020)
- i) Prehit Patel (Ph.D. MAE 2021)
- j) Ryan Gott (Ph.D. MAE 2019)
- k) Rush Elkins (M.S. MAE 2019)
- l) Aditya Mankame (Ph.D. MAE 2022)
- m) Adam Bower (M.S. MAE 2019)
- n) Garrett Jennings (M.S. MAE 2019)
- o) Annette Fisher (Ph.D., MAE 2018)
- p) Stephen Bluestone (Ph.D. committee, 2020)
- q) Sneha Reddy Vanga (Ph.D., MAE, 2020)
- r) Mingying Su (Ph.D., MAE, 2019)
- s) Roberto Dextre (Ph.D., 2018)
- t) Joseph Buckley (Ph.D., MAE, expected graduation date: 2020)
- u) Andrew Hiatt (Ph.D., MAE, 2018)
- v) Althea Wilson (Ph.D., MAE, expected graduation date: 2020)
- w) Sneha Reddy Vanga (M.S., MAE, 2016)
- x) Nathan Rogers (M.S. MAE 2015)
- y) Man Zhang (Ph.D., MAE, 2015)
- z) Jose Suarez (Ph.D., MAE, 2015)
- aa) Dustin Matthias (M.S., MAE 2014)
- ab) Daniel Cavendar (M.S., MAE, 2013)
- ac) Travis Taylor (Ph.D., MAE, 2012)
- ad) Carolyn Horn (M.S., MAE, 2011)
- ae) Brandon Mader (M.S., MAE, 2011)
- af) Bruce Moylan (PhD, MAE, 2010)
- ag) Joshua Rojahn (M.S., MAE, 2010)
- ah) Richard Bucak (M.S., MAE, 2007)
- ai) John Sinko (PhD, Physics, 2008)

6. Post Doctorate and Research Staff

- a) Weiwei Luo. She helped develop a 3D, parallel smooth particle hydrodynamic code that we will be using in fusion and high energy density physics research (August 2010-May 2012)
- b) Allen Davis
- c) Sumontro Sinha

Other Instructional Activities

1. Mentor and advise a graduate student (Mr. Drew Ahern) at the University of IL in Urbana Champaign in electromagnetic propulsion.
2. Mentor for International Baccalaureate Program for three high school students (2010-2011)
3. Mentored and advised an undergraduate at the University of Illinois at Springfield for his senior project in rocket propulsion (2011).
4. Had students of electric propulsion class develop a set of educational web pages on various electric propulsion concepts, now available to the general public.

PUBLICATIONS

Refereed Journal Publications

1. Cassibry, J. T., Thio, Y. C. F., and Wu, S. T., "2-D Axisymmetric Magnetohydrodynamic Analysis of Blowby in a Coaxial Plasma Accelerator," *Physics of Plasmas*, 13(5), May 2006.
 2. Cassibry, J. T., Thio, Y. C. F., Markusic, T. E., and Wu, S. T., "Numerical Modeling of a Pulsed Electromagnetic Plasma Thruster Experiment," *Journal of Propulsion and Power*, 22(2), March-April, 2006, pp 628-636.
 3. Cassibry, J. T., "Effects of Equation of State and Transport on the Modeling of Pulsed Plasma Accelerators," *Journal of Propulsion and Power*, 23(2), March-April 2007, pp. 507-510.
 4. Cassibry, J. T., and Wu, S. T., "Axisymmetric Boundary Conditions for a Super-Alfvenic Magnetic Nozzle," *Journal of Physics D: Applied Physics*, 40 (2007) pp. 5130-5139.
 5. ³Hsu, Scott C., "Technical Summary of the First U.S. Plasma Jet Workshop," *Journal of Fusion Energy*, DOI: 10.1007/s10894-008-9162-1, 27 (4), 2008.
 6. Cassibry, J. T., "Comparison of Directly and Inductively Coupled Thrusters," *IEEE Transactions on Plasma Science*, Special Issue on Plasma Propulsion, Part 1 of 4, October 2008, 13(5), pp. 2180-2188.
 7. Cassibry, J. T., Cortez, R. J., Hsu, S. C., and Witherspoon, F. D., "Estimates of confinement time and energy gain for plasma liner driven magneto-inertial fusion using an analytic self-similar converging shock model," *Physics of Plasmas*, 16, 112707 (2009).
 8. Richardson, G. A., Cassibry, J. T., Chung, T. J. and Wu, S. T., "Finite Element Form of FDV for Widely Varying Flowfields," *Journal of Computational Physics*, 229 (2010) 145-167.
 9. A. G. Lynn, E. Merritt, M. Gilmore, S. C. Hsu, F. D. Witherspoon, and J. T. Cassibry, "Diagnostics for the Plasma Liner Experiment," *Review of Scientific Instruments* **81**, 10E115 2010.
 10. Awe, T. J., Adams, C. S., Davis, J.S., Hanna, D. S., Hsu, S. C., Cassibry, J. T., "One-dimensional radiation-hydrodynamic scaling studies of imploding spherical plasma liners," *Physics of Plasmas* 18, 072705, (2011).
 11. J. T. Cassibry, M. Stanic, S. C. Hsu, F. D. Witherspoon, S.I. Abarzhi, "Tendency of spherically imploding plasma liners formed by merging plasma jets to evolve toward spherical symmetry," *Physics of Plasmas*, 19, 052702, 2012.
 12. Hsu, S. C., T. J. Awe, S. Brockington, A. Case, J. T. Cassibry, G. Kagan, S. J. Messer, et al., "Spherically Imploding Plasma Liners as a Standoff Driver for Magnetoinertial Fusion." *Plasma Science, IEEE Transactions On PP* (99): 1 –12. doi:10.1109/TPS.2012.2186829.
- 3 Peer reviewed publication of highlights from U.S. Plasma Jet Workshop

13. Miernik, J., G. Statham, L. Fabisinski, C.D. Maples, R. Adams, T. Polsgrove, S. Fincher, J. Cassibry, R. Cortez, M. Turner, T. Percy, "Z-Pinch Fusion-based Nuclear Propulsion." *Acta Astronautica*, **82**, 173 (2013).
14. M. Stanic, R.F. Stellingwerf, J.T. Cassibry, S.I. Abarzhi, "Scale coupling in Richtmyer-Meshkov flows induced by strong shocks," *Physics of Plasmas*, **19**, 082706, 2012.
15. J. S. Davis, S. C. Hsu, I. E. Golovkin, J. J. MacFarlane, and J. T. Cassibry, "One-dimensional radiation-hydrodynamic simulations of imploding spherical plasma liners with detailed equation-of-state modeling," *Physics of Plasmas*, **19**, 102701, 2012.
16. Hsu, S. C., E. C. Merritt, A. L. Moser, T. J. Awe, S. J. E. Brockington, J. S. Davis, C. S. Adams, A. Case, J. T. Cassibry, J. P. Dunn, M. A. Gilmore, A. G. Lynn, S. J. Messer, F. D. Witherspoon, "Experimental Characterization of Railgun-driven Supersonic Plasma Jets Motivated by High Energy Density Physics Applications." *Physics of Plasmas*, **19**, 123514, 2012.
17. J.T. Cassibry, M. Stanic, and S.C. Hsu, "Ideal hydrodynamic scaling relations for a stagnated imploding spherical plasma liner formed by an array of merging plasma jets," *Physics of Plasmas* **20**, 032706 (2013).
18. Stanic, M., J. McFarland, R. F. Stellingwerf, J. T. Cassibry, D. Ranjan, R. Bonazza, J. A. Greenough, and S. I. Abarzhi, "Non-Uniform Volumetric Structures in Richtmyer-Meshkov Flows." *Physics of Fluids* **25**, (10): 106107 (2013).
19. J. Cassibry, R. Cortez, M. Stanic, W. Seidler, R. Adams, G. Statham, and L. Fabisinski, "The Case and Development Path for Fusion Propulsion," *Journal of Spacecraft and Rockets* **52** (2), pp. 595–612 (2015).
20. G. A. Wurden, T. E. Weber, P. J. Turchi, P. B. Parks, T. E. Evans, S. A. Cohen, J. T. Cassibry, E. M. Campbell, "A New Vision for Fusion Energy Research: Fusion Rocket Engines for Planetary Defense," *Journal of Fusion Energy*, pp. 1-11, 10.1007/s10894-015-0034-1 (Nov. 16, 2015)
21. R. Agnew, J. T. Cassibry, B. Winterling, "Analytic Model to Estimate Thermonuclear Neutron Yield in Z-Pinches Using the Magnetic Noh Problem," *IEEE Transactions on Plasma Science*, **44** (10), October 2016, pp. 2181-2189.
22. M. Rodriguez, J. T. Cassibry, "A Three-Dimensional Smoothed Particle Hydrodynamics Model of Electrode Erosion.," *IEEE Transactions on Plasma Science*, **45** (11), November 2017, pp. 3030-3037.
23. Cortez, Ross; Cassibry, Jason, "Stopping Power in D⁶Li Plasmas for Target Ignition Studies," *Nuclear Fusion*, **58** (2), p. 026009, 2018.
24. S. C. Hsu , S. J. Langendorf, K. C. Yates, J. P. Dunn, S. Brockington, A. Case, E. Cruz, F. D. Witherspoon, M. A. Gilmore, J. T. Cassibry , R. Samulyak, P. Stoltz, K. Schillo, W. Shih, K. Beckwith, and Y. C. F. Thio, "Experiment to Form and Characterize a Section of a Spherically Imploding Plasma Liner," *IEEE Transactions on Plasma Science*, **46**(6), June 2018.
25. K. Schillo, J. Cassibry, S. Thompson, M. Rodriguez, "Test Suite for Smooth Particle Hydrodynamic Code Relevant to Spherical Plasma Liner Formation and Implosion," *ASME Journal of Nuclear Engineering and Radiation Science*, **5**(4), 042201 (Jul 19, 2019) .
26. Taylor, B., J. Cassibry, R. Adams, G. Doughty, B. Seidler, R. Cortez, P. Giddens, et al. 2018. "An Overview of the Charger-1 Pulsed Power Facility." *IEEE Transactions on Plasma Science* **46** (11): 3986–92. <https://doi.org/10.1109/TPS.2018.2862860>.
27. J. Cassibry, B. Winterling, K. Schillo, "Pulsed Magnetic Nozzle for Fusion Propulsion," *J. of British Interplanetary Society*, **71**, pp.119-125
28. A. Aueron, D. Thomas, J. Cassibry, "Analytical Modeling of Heat Deposition in Propellant for Nuclear Thermal Rockets," *J. of Spacecraft and Rockets*, **56**(5), March 2019.
29. S. Thompson, J. Cassibry, "Effects of propagation distance and half angle on the merging of hypervelocity plasma jets," *Physics of Plasmas*, **26** (5): 052701.
30. Y. C. Francis Thio, Scott C. Hsu, F. Douglas Witherspoon, Edward Cruz, Andrew Case, Samuel

- Langendorf, Kevin Yates, John Dunn, Jason Cassibry, Roman Samulyak, Peter Stoltz, Samuel J. Brockington, Ajoke Williams, Marco Luna, Robert Becker & Adam Cook (2019), "Plasma-Jet-Driven Magneto-Inertial Fusion," *Fusion Science and Technology*, DOI: [10.1080/15361055.2019.1598736](https://doi.org/10.1080/15361055.2019.1598736)
31. Schillo, Kevin, Cassibry, Jason, "Effects of initial conditions and transport on ram pressure, Mach number, and uniformity for plasma liner formation and implosion," *Physics of Plasmas* **27**, 042707 (2020); <https://doi.org/10.1063/1.5143009>.
 32. Thompson, Seth, Cassibry, Jason, "2D Modeling of Fusion Ignition Conditions for a Multilayer Plasma Liner MagnetoInertial Fusion Target in a Cylindrical Configuration," *Physics of Plasmas* **27**, 022701 (2020); <https://doi.org/10.1063/1.5132336>.
 33. Englestad, Tyler J., and Jason T. Cassibry. "Smoothed Particle Hydrodynamic Investigation of Model Vibrations in Hypersonic Flow." *Computers & Fluids*, May, 2020 104538. <https://doi.org/10.1016/j.compfluid.2020.104538>.
 34. Taylor, B., J. Cassibry, and R. Adams. 2020. "Ignition and Burn in a Hybrid Nuclear Fuel for a Pulsed Rocket Engine." *Acta Astronautica* 175 (October): 465–75. <https://doi.org/10.1016/j.actaastro.2020.04.007>
 35. Kevin Yates, Samuel Langendorf, Scott Hsu, John Dunn, Mark Gilmore, Samuel Brockington, Andrew Case, Edward Cruz, F. Witherspoon, Y. C. Francis Thio, Jason Cassibry, and Kevin Schillo, "Experimental characterization of a section of a spherically imploding plasma liner formed by merging hypersonic plasma jets," *Physics of Plasmas*, **27**, 062706 (2020); <https://doi.org/10.1063/1.5126855>.
 36. Englestad, Tyler J., and Jason T. Cassibry. 2020. "Investigations of a Novel Boundary Condition Approach for the Accurate Prediction of Hypersonic Oblique Shocks in Mesh-Free Lagrangian Simulations." *Aerospace Science and Technology* 107 (December): 106322. <https://doi.org/10.1016/j.ast.2020.106322>.

Ph. D. Dissertation

"Numerical Modeling Studies of a Coaxial Plasma Accelerator as a Standoff Driver for Magnetized Target Fusion," Mechanical and Aerospace Engineering Department, University of Alabama in Huntsville, May 2004.

Invited Presentations

1. Adams, R. and Cassibry, J. T., "The Need for Fusion Propulsion Research," in 53rd JANNAF Propulsion Meeting, December 5-8, 2005, Monterey, California.
2. Keynote Speaker for NASA Missouri Space Grant Consortium, Springfield, MO, April 26, 2010.
3. S. C. Hsu, T. J. Awe, S. Brockington, A. Case, J. T. Cassibry, G. Kagan, S. J., Messer, M. Stanic, X. Tang, D. R. Welch, and F. D. Witherspoon, "Spherically Imploding Plasma Liners as a Standoff Driver for Magneto-Inertial Fusion," 38th IEEE International Conference on Plasma Science (ICOPS) and 24th Symposium on Fusion Engineering (SOFE), Chicago, IL, June 26-30, 2011.
4. J. Cassibry, "The case and development path for fusion propulsion," invited speaker for Huntsville AL L5 Society (HAL5) Monthly Public Meeting, October 6, 2011, Huntsville, AL.
5. J. Cassibry, "Fusion Propulsion for Exploration of the Solar System," invited speaker for TedxHuntsville, <http://tedxtalks.ted.com/video/TEDxHuntsville-Jason-Cassibry-F>, September 18, 2012, Huntsville.
6. J. Cassibry, "A Sustainable Roadmap for Fusion Propulsion," Innovation Forum at NASA Glenn Research Center 24 June 2013.
7. J. Cassibry, "The Non-Equilibrium Fusion Plasma Research Center and Development of a

- Fusion Augmented Thruster,” Sandia National Laboratory Technical Seminar, Albuquerque, New Mexico, March 10, 2014.
8. J. Cassibry, R. Samulyak, K. Schillo, P. Stoltz, K. Beckwith, M. Stanic, J. Dougherty, and S. C. Hsu, “Overview of 1D and 3D modeling results on plasma-liner formation and implosion in support of plasma-jet-driven magneto-inertial fusion,” The Exploratory Plasma and Fusion Workshop, Auburn, AL, 2/24/16.
 9. J. Cassibry, W. Seidler, R. Cortez, “Progress in Fusion Propulsion Research at the University of Alabama in Huntsville,” *Plenary Talk*, Tennessee Valley Interstellar Workshop, Chattanooga, TN, 3/1/16.
 10. J. Cassibry, “Progress on deuterium fusion experiments at UAH: the making of the first real impulse engine,” invited speaker for Huntsville AL L5 Society (HAL5) Monthly Public Meeting, December 1, 2016, Huntsville, AL.
 11. J. Cassibry, “Reaching The Stars Utilizing Fission and Fusion Power,” Tennessee Valley Interstellar Workshop, 2019 Symposium, Wichita, KS.

In preparation

1. “An Electromagnetic Field and Self-Consistent Circuit Solver for Smooth Particle Hydrodynamics for Pulsed Power and Magneto-inertial Fusion Applications,” to be submitted to Journal of Computational Physics.

Refereed Conference Proceedings

1. L. H. Sentman, J. T. Cassibry, B. P. Wootton, and A. J. Eyre, “CW HF laser line selected performance,” AIAA Guidance, Navigation, and Control Conference and Exhibit, Portland, OR, Aug. 9-11, 1999.
2. L. H. Sentman, A. J. Eyre, B. P. Wootton, and J. T. Cassibry, “Comparison of cw HF laser performance for several nozzles,” AIAA Guidance, Navigation, and Control Conference and Exhibit, Portland, OR, Aug. 9-11, 1999.
3. J. T. Cassibry, S. T. Wu, Y. C. F. Thio, “An Estimation of Tolerances on Relative Velocities of Spherically Converging Plasma Jets,” 31st AIAA Plasmadynamics and Lasers Conference, 19-22 June, 2000, Denver, Colorado.
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Conference Presentations without Proceedings

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 13. Jason T. Cassibry, “Accessing the HEDP Regime Using a Plasma Liner,” 2008 APS April Meeting and HEDP/HEDLA Workshop, St. Louis, MO.
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38. M. Derzon, J. Cassibry, "The Non-equilibrium Fusion Plasma Research Center and Development of a Fusion Augmented Thruster using Microfabricated Components," Nuclear and Emerging Technologies for Space (NETS 2014), February 24-26, 2014, Infinity Science Center, Mississippi.
39. Cassibry, Jason, Jesse Dougherty, Seth Thompson, S. C Hsu, and F. D. Witherspoon, "Ram Pressure Scaling and Non-Uniformity Characterization of a Spherically Imploding Liner Formed by Hypervelocity Plasma Jets," Workshop on Exploratory Topics in Plasma and Fusion Research (EPR) and US-Japan Compact Torus (CT) Workshop Madison, WI, August 5-8, 2014.
40. Cassibry, Jason, Jesse Dougherty, Seth Thompson, Scott Hsu, and F.D. Witherspoon, "Ram-Pressure Scaling and Non-Uniformity Characterization of a Spherically Imploding Liner Formed by Hypervelocity Plasma Jets," In *Bulletin of the American Physical Society*. Vol. 59 (15), October 28, 2014, New Orleans, Louisiana, <http://meetings.aps.org/Meeting/DPP14/Event/225584>.
41. Hsu, S. C, J. T. Cassibry, and F. D. Witherspoon, "Contoured-Gap Coaxial Guns for Imploding Plasma Liner Experiments," In *Bulletin of the American Physical Society*. Vol. 59 (15), October 28, 2014, New Orleans, Louisiana, <http://meetings.aps.org/link/BAPS.2014.DPP.JP8.89>.
42. Witherspoon, F. D., A. Case, S. Brockington, J. T. Cassibry, and S. C Hsu, "Contoured-Gap Coaxial Guns for Imploding Plasma Liner Experiments," In *Bulletin of the American Physical Society*. Vol. 59 (15), October 28, 2014, New Orleans, Louisiana, <http://meetings.aps.org/link/BAPS.2014.DPP.JP8.90>.
43. R. Adams, J. Cassibry, G. Statham, P. Giddens, "Development of the Pulsed Fission Fusion (puff) Deep Space Propulsion System," 26th IEEE Symposium on Fusion Engineering (SOFE), Austin, TX, 5/31/15-6/4/15.
44. B. Winterling, R. Agnew, J. Cassibry, "Batch Burn Estimate of Thermal Neutron Yield in Pulsed Z-Pinches by Time and Spatial Integration of the Magnetic Noh Problem," 20th IEEE Pulsed Power Conference (PPC), Austin, TX, 5/31/15-6/4/15.
45. Cassibry, Jason, Scott Hsu, Kevin Schillo, Roman Samulyak, Peter Stoltz, and Kris Beckwith. 2015. "Modeling of the Merging, Liner Formation, Implosion of Hypervelocity Plasma Jets for the PLX- α Project." In *Bulletin of the American Physical Society*, **60** (19), American Physical Society, <http://meetings.aps.org/Meeting/DPP15/Session/NO4.3>.
46. Hsu, S. C., F. D. Witherspoon, J. T. Cassibry, M. Gilmore, R. Samulyak, and P. Stoltz. 2015. "The PLX- α Project: Demonstrating the Viability of Spherically Imploding Plasma Liners as an MIF Driver." In *Bulletin of the American Physical Society*. Vol. Volume 60, Number 19. American Physical Society. <http://meetings.aps.org/Meeting/DPP15/Session/NO4.1>.
47. Schillo, Kevin, Jason Cassibry, and Scott Hsu. 2015. "Effects of Real Viscosity on Plasma Liner Formation and Implosion from Supersonic Plasma Jets." In *Bulletin of the American Physical Society*, **60** (19), American Physical Society, <http://meetings.aps.org/Meeting/DPP15/Session/GP12.29>.
48. Cassibry, J. C., R. Samulyak, K. Schillo, W. Shih, and S. C Hsu, 2016, "Numerical Modeling of Plasma-Liner Formation and Implosion for the PLX- α Project," In *Bulletin of the American Physical Society*, Vol. 61 (18), San Jose, CA.

49. Hsu, S. C, F. D. Witherspoon, J. C. Cassibry, M. Gilmore, R. Samulyak, and P. Stoltz, 2016, "PLX- α Project: Progress and Plans," In *Bulletin of the American Physical Society*, Vol. 61 (18), San Jose, CA.
50. Samulyak, R., J. C. Cassibry, K. Schillo, W. Shih, K. Yates, and S. C Hsu, 2016, "Simulations of Plasma-Liner Formation and Implosion for the PLX- α Project," In *Bulletin of the American Physical Society*, Vol. 61 (18), San Jose, CA.
51. Schillo, K., J. C. Cassibry, R. Samulyak, W. Shih, and S. C Hsu, 2016, "Ion-Viscosity Effects on Plasma-Liner Formation and Implosion via Merging Supersonic Plasma Jets," In *Bulletin of the American Physical Society*, Vol. 61 (18), San Jose, CA.
52. J. Cassibry, R. Adams, R. Cortez, "Three Dimensional Modeling of Pulsed Fission Fusion (PUFF) Targets for Advanced Propulsion," Nuclear and Emerging Technologies for Space (NETS 2017), February 27-March 2, 2017, Orlando, FL.
53. Brian Taylor, Jason Cassibry, Ross Cortez, Glen Doughty, Robert Adams, Anthony DeCicco, "Charger 1: A New Facility for Z-Pinch Research," *Proceedings of the 10th International Conference on Dense Z Pinch*, August 13-17, 2017.
54. Robert Adams, William Seidler, Patrick Giddens, Leo Fabisinski, Jason Cassibry, "Linear Transformer Drivers for Z-pinch Based Propulsion," *Proceedings of the 10th International Conference on Dense Z Pinch*, August 13-17, 2017.
55. Robert Adams, Jason Cassibry, Kevin Schillo, "The Pulsed Fission-Fusion (PuFF) Concept for Deep Space Exploration and Terrestrial Power Generation," *Proceedings of the 10th International Conference on Dense Z Pinch*, August 13-17, 2017.
56. R. Cortez, J. Cassibry, M. Lapionte, and R. Adams, "Three dimensional calculation of thermonuclear ignition conditions for magnetized targets," *Bulletin of the American Physical Society*, 59th Annual Meeting of the APS Division of Plasma Physics, 62 (12) <http://meetings.aps.org/Meeting/DPP17/Session/NO5.2>.
57. J. Cassibry, R. Samulyak, K. Schillo, W. Shih, P. Stoltz, K. Beckwith, S. Langendorf, and S. Hsu, "Numerical Modeling of Plasma-Liner Formation and Implosion for PLX- α ," *Bulletin of the American Physical Society*, 59th Annual Meeting of the APS Division of Plasma Physics, 62 (12), <http://meetings.aps.org/Meeting/DPP17/Session/TO7.5>.
58. K. Schillo, J. Cassibry, R. Samulyak, S. Langendorf, and S. Hsu, "Effects of equation of state, transport, and initial conditions on plasma liner formation and implosion from hypervelocity jets," *Bulletin of the American Physical Society*, 59th Annual Meeting of the APS Division of Plasma Physics, 62 (12) <http://meetings.aps.org/Meeting/DPP17/Session/UP11.121>.
59. A. Aueron, D. Thomas, J. Cassibry, "Analytical Modeling of Heat Deposition in Propellant for Spacecraft Utilizing Nuclear Thermal Propulsion," 11th Wernher von Braun Memorial Symposium October 23 – 25, 2018.
60. J. Cassibry, K. Schillo, R. V. Samulyak, S. C. Hsu, Y C Francis Thio, "Effects of plasma jet initial conditions and number on peak ram pressure and uniformity for plasma jet driven magneto-inertial fusion experiments on PLX- α ," 60th Annual Meeting of the APS Division of Plasma Physics, 63 (11), <http://meetings.aps.org/Meeting/DPP18/Session/GP11.133>
61. S. Hsu, S. Langendorf, J. Dunn, K. Yates, M. Gilmore, Y. C. Thio, F. Witherspoon, E. Cruz, S. Brockington, A. Case, M. Luna, A. Williams, J. Cassibry, K. Schillo, R. Samulyak, W. Shih, P. Stoltz, "Spherically Imploding Plasma Liners as a Standoff Magneto-Inertial-Fusion Driver," 60th Annual Meeting of the APS Division of Plasma Physics, 63 (11), <http://meetings.aps.org/Meeting/DPP18/Session/BM9.1>.
62. S. Langendorf, T. Byvank, J. Dunn, F. Witherspoon, A. Case, E. Cruz, and J. Cassibry, "Progress Toward the Formation of Fully Spherical Imploding Plasma Liners on PLX," 61st Annual Meeting of the APS Division of Plasma Physics, 64 (11), <http://meetings.aps.org/Meeting/DPP19/Session/TO6.12>.

63. N. Schilling, J. Cassibry, "Characterization of a fusion-class pulsed magnetic nozzle," AAS 2020 Von Braun Symposium.
64. Vyas, Aalap, Jason Cassibry, Sumontro Sinha, F. Douglas Witherspoon, and Samuel Langendorf. 2020. "Three-Dimensional Modeling of High Beta Magnetized Targets for Plasma-Jet-Driven Magneto-Inertial-Fusion (PJMIF)." In Bulletin of the American Physical Society. American Physical Society. <https://meetings.aps.org/Meeting/DPP20/Session/JP18.4>.

Popular Press Articles and Media Events on my Research

1. "New research could power rocket trip to Mars in weeks, not months," Lee Roop, *Huntsville Times*, May 17, 2012, http://blog.al.com/space-news/2012/05/new_research_could_power_trip.html.
2. "The Big Machine That Could Lead to Fusion-Powered Spaceships," Sarah Fecht, *Popular Mechanics*, June 5, 2012, <http://www.popularmechanics.com/science/space/rockets/the-big-machine-that-could-lead-to-fusion-powered-spaceships-9450996>.
3. "Charger-1 will help UAHuntsville-led research team study thermo-nuclear propulsion," Mike Kelley, *Huntsville Times*, July 5, 2012, http://www.al.com/42/index.ssf/2012/07/charger-1_will_help_uahuntsvil.html.
4. "Interview on The Space Show," Dr. David Livingston, Host, <http://thespaceshow.wordpress.com/2012/10/10/dr-jason-cassibry-tuesday-10-9-12/>.
5. "Interview on The Space Show," Dr. David Livingston, Host," <http://archived.thespaceshow.com/shows/2147-BWB-2013-12-20.mp3>.
6. "The Unveiling of Charger 1 Fusion Pulse Power Generator," February 22, 2013, UAH Aerophysics Center. Participants included Governor Robert Bentley, U.S. Congressman Mo Brooks, Redstone Garrison Commander Col. John Hamilton, UAH President Robert AltenkirchMSFC Associate Director Dale Thomas, and The Boeing Company Vice President Greg Hyslop.
7. "Guest Expert on the No Dumb Questions podcast. Episode 84, Nuclear Fusion Propulsion 101," with hosts Destin Sandlin (from SmarterEveryDay) and Matt Whitman, May 22, 2020, <https://www.nodumbquestions.fm/listen/2020/5/22/084-nuclear-fusion-propulsion-101> (*last accessed May 23, 2020*).

Local Research Seminars

1. "The Case and Development Path for Fusion Propulsion," J. Cassibry, North Alabama Science Fiction Association (NASFA), February 17, 2012, Huntsville, Alabama.
2. J. Cassibry, "Fusion for In-Space Propulsion," North Alabama Section of ASME, April 2, 2014, Huntsville, Alabama.
3. J. Cassibry, "Development Plan for a Fission and Fusion Powered Propulsion System to Reach Mars in 45 Days," North Alabama Section of ASME, April 2, 2014, Huntsville, Alabama.
4. J. Cassibry, "Advanced propulsion for rapid interplanetary and interstellar propulsion," Paducah Tech on Tap, August 31, 2020.

Technical Reports

1. L. H. Sentman, J. T. Cassibry, A. J. Eyre, and B. P. Wootton, Overtone Mirror Characteristics as a Function of Time, AAE TR 99-07, UILU Eng 99-0507, June, 1999.
2. L. H. Sentman, J. T. Cassibry, B. P. Wootton and A. J. Eyre, Influence of Grating Design on CW HF Laser Line Selected Performance, AAE TR 99-08, UILU Eng 99-0508, June, 1999.
3. Clark Hawk et al., Final Report: Methane viability Assessment, submitted to Perkins Technical Services, January 29, 2008.

4. Jason Cassibry, Final Report: Modeling of Advanced Microwave Electrothermal Thruster Fueled by Water, submitted to Orbitec, January 4, 2010.
5. Tara Polsgrove, Leo Fabisinski, Sharon Fincher, C. Dauphne Maples, Janie Miernik, Tom Percy, Geoff Statham, Matt Turner, Jason Cassibry, Ross Cortez, John Santarius, Final Report: "Z-Pinch Pulsed Plasma Propulsion Technology Development," Advanced Concepts Office (ED04), Marshall Space Flight Center, October 8, 2010.

SPONSORED RESEARCH

Federal (\$3,448,931 as PI or Co-I)

1. "Magnetic Nozzle and Efficiency of the Plasma Detachment", Boris Breizman (UT-Austin, PI), Jason Cassibry (Co-I), (Other participants from JSC, MSFC), NASA Broad Agency Announcement 04-02 - Human and Robotic Technology, 01/01/2005-12/31/2005, (Note, all contracts funded through this BAA were canceled halfway through due to agency redirection of funds), \$896,146, (Cassibry \$134,221).
2. "Theoretical Investigation of Plasma Jets Driven Magneto-inertial Fusion using Smooth Particle Hydrodynamics, Department of Energy," Jason Cassibry (PI), Office of Science, EPSCoR, 1/1/2008-12/31/2008, \$422,613, (Cassibry \$422,613).
3. "An Upgrade to the Solid Propellant Rocket Performance Prediction Computer Program (SPP)," Jason Cassibry (PI), NASA MSFC, 6/1/2008-8/9/2008, \$30,000, (Cassibry \$30,000).
4. "Performance Calculations for Plasma-Driven Micrometeoroid Accelerator," Jason Cassibry (PI), NASA MSFC, NNM05AA22A Supplement 51, 5/1/2010-8/9/2010, \$17,500, (Cassibry \$17,500).
5. "Z-Pinch/Dense Plasma Focus Concept for Fusion Propulsion," Jason Cassibry (PI), NASA Innovative Partnerships Program, NNM05AA22A, (added to NNM05AA22A Supplement 51), 10/1/2010-3/30/2010 \$7,000, (Cassibry \$7,000).
6. "Formation of Imploding Plasma Liners for Fundamental HEDP Studies and MIF Standoff Driver Concept," Jason Cassibry (PI), U.S. Department of Energy, DE-SC0003560, 2/1/2010 – 5/31/2013, \$803,690, (Cassibry \$803,690).
7. "Innovative Propulsion Technology Support," Propulsion Research Center Investigator, [R. Frederick and R. Tyson (CO-PIs), N. Slegers and J. Cassibry, (Propulsion Research Center Investigators), M. Griffin (Director)], Contract HQ0147-11-C-6006, Missile Defense Agency, 2/10/2011 to 10/31/2012, \$751K (Cassibry \$67,554).
8. "Rapid Response Architecture Optimization," Co-Investigator, Michael Griffin (PI), Jason Cassibry Co-PI), Missile Defense Agency, HQ0147-10-C-6002, 08/12/2010-08/11/2012, \$214,509, (Cassibry \$214,509).
9. "Innovative Propulsion Technology Support," Propulsion Research Center Investigator, Robert Frederick (PI) [R. Tyson (CO-PIs), N. Slegers and J. Cassibry, (Propulsion Research Center Investigators)], Contract HQ0147-11-C-6006, Missile Defense Agency, 11/1/2012 to 12/31/2013, \$800K (Cassibry \$65,000).
10. "Innovative Propulsion Technology Support," Propulsion Research Center Investigator, [R. Frederick and R. Tyson (CO-PIs), N. Slegers and J. Cassibry, (Propulsion Research Center Investigators), Contract HQ0147-11-C-6006, Missile Defense Agency, 1/1/2014 – 3/30/2015, \$853K (Cassibry \$68,000).
11. "Support for Frozen Deuterium Fiber Z-Pinch Research at the Navy Research Laboratory," Jason Cassibry (PI), subcontract to Navy Research Laboratory, as part of a proposal to ARPA-E, 6/18/2014 - 6/17/2015, \$36,853, (Cassibry, PI, \$36,853).
12. "Innovative Propulsion Technology Support ," Richard Tyson (PI), MDA, 1/1/15-4/30/15, \$250,611.00 (Cassibry, Research Scientist, \$40,000).

13. "Pulsed Fission-Fusion (PuFF) Propulsion System ," Jason Cassibry (PI), NASA MSFC, 3/1/15-9/30/15, \$30000 (Cassibry, PI, \$30,000).
14. "Game-Changing Kill Vehicle/Interceptor Technology," Robert Frederick (PI), MDA, 3/30/15-3/29/16, \$828,474.00 (Cassibry, Co-PI, \$125,000.00).
15. Spherically Imploding Plasma Liners as a Standoff Driver for Magnetoinertial Fusion," Jason Cassibry (PI), HyperV Technologies, Inc., subcontract of collaborative proposal to ARPA-E, 7/1/15-6/30/18, \$379,736 (Cassibry, PI, \$379,736.00).
16. "Pulsed Fission-Fusion (PuFF) Propulsion System ," Jason Cassibry (PI), NASA MSFC, 9/28/15-1/7/16, \$15000 (Cassibry, PI, \$15,000).
17. "Pulsed Fission-Fusion (PuFF) Propulsion System ," Jason Cassibry (PI), NASA MSFC, 1/8/16-6/1/16, \$15000 (Cassibry, PI, \$15,000).
18. Gradient Field Imploding Liner Fusion Propulsion System ," Jason Cassibry (PI), NASA , 5/15/17-3/1/17, \$59,982 (Cassibry, PI, \$59,982).
19. Innovative Propulsion and Power Technology Support," Robert Frederick (PI), MDA , 3/30/17 to 3/29/18, \$300,000.00 (Cassibry, Co-I, \$100,000).
20. SME Subtask 4.55: Space Technology Development Branch (ST23) Nuclear Thermal Propulsion (NTP) Support ," Dale Thomas (PI), NASA , 05/01/2017-10/31/17 , \$47,108.97 (Cassibry, PI, \$12,906.90).
21. "Pulsed Fission-Fusion (PuFF) Propulsion System," Jason Cassibry (PI), NASA MSFC, 3/1/15-3/31/21, \$62,153.86 (funding increments awarded on 02/08/17, 11/10/16, and 06/23/16) (Cassibry, PI, \$62,153.86).
22. "Pulsed Fission-Fusion (PuFF) Propulsion System," Jason Cassibry (PI), NASA MSFC, 3/1/15-3/31/21, \$20,000 (funding increments awarded on 06/29/17) (Cassibry, PI, \$20,000).
23. "Pulsed Fission-Fusion (PuFF) Propulsion System," Jason Cassibry (PI), NASA MSFC, 3/1/15-3/31/21, \$121,231 (funding increments awarded in FY19 and 20) (Cassibry, PI, \$121,231).
24. "Augmenting a Smooth Particle Hydrodynamic with Maxwell Equation solver (SPFMax) to model a Magnetic Nozzle for Advanced Propulsion," Jason Cassibry (PI), NASA, 8/1/19 – 7/31/20, \$66,000 (Cassibry, PI, \$66,000)
25. "Augmenting a Smooth Particle Hydrodynamic with Maxwell Equation solver (SPFMax) to model a Magnetic Nozzle for Advanced Propulsion," Jason Cassibry (PI), NASA, 8/1/18 – 7/31/19, \$75,000 (Cassibry, PI, \$75,000)
26. "F/DOD/MDA/Game-Changing Kill Vehicle/Interceptor Technology," Robert Frederick (PI), MDA, 1/30/2019-1/29/2020, \$634,224.00, (Cassibry, Co-I, \$90,000).
27. "Pulsed Fission-Fusion (PuFF) Propulsion System, part of NIAC Phase II Award from NASA HQ," Jason Cassibry (PI), 6/1/18-5/31/2020, \$169,982.00 (Cassibry, PI, \$169,982.00)
28. SME Subtask 4.55: Space Technology Development Branch (ST23) Nuclear Thermal Propulsion (NTP) Support ," Dale Thomas (PI), NASA , 2/14/19-2/13/20, \$148,203 (Cassibry, Co-PI, \$20,000).
29. SME Subtask 4.55: Space Technology Development Branch (ST23) Nuclear Thermal Propulsion (NTP) Support ," Dale Thomas (PI), NASA , 2/14/19-4/30/20, \$113,869 (Cassibry, Co-PI, \$40,000).
30. "F/DOD/MDA/Game-Changing Kill Vehicle/Interceptor Technology," Robert Frederick (PI), MDA, 1/31/2020-1/31/2021, \$1,000,000.00, (Cassibry, Co-I, \$100,000).

31. "Spherically Imploding Plasma Liners as a Standoff Driver for Magnetoinertial Fusion," Jason Cassibry (PI), HyperV Technologies, Inc., subcontract of collaborative proposal to ARPA-E, 7/1/19-2/29/20, \$40,000 (Cassibry, PI, \$40,000).

State (\$347,557 as PI or Co-I)

1. "Studies in Helicity Injection in a Plasmoid Thruster as a Bridge to Near Term Fusion Propulsion," Jason Cassibry (PI and advisor), on behalf of graduate student Ross Cortez (author of proposal) Alabama Space Grant Fellowship, 8/19/2009/-8/18/2010, \$24,000.
2. "Studies in Z-Pinch Fusion Propulsion," Jason Cassibry (PI and advisor), on behalf of graduate student Ross Cortez (author of proposal) Alabama Space Grant Fellowship, 8/19/2001/-8/18/2011, \$24,000, (Cassibry \$24,000).
3. "Development and Testing of the Charger Facility for Deep Space Fusion Propulsion Research," Jason Cassibry (PI), Alabama Innovation Fund, 10/1/12-12/31/14, \$299,557.

Industry (\$438,931 as PI or Co-I)

1. "Investigation of plasma ignition of methane," C. Hawk (PI), J. Blackmon (Co-I), Z. Li (Co-I), J. Cassibry (Co-I), Perkins Technical Institute, through Propulsion Research Center, 9/1/2006-8/31/2007, \$377,957, (Cassibry \$30,000).
2. "Theoretical Support of an FRC Thruster Model," Jason Cassibry (PI), Advatech Pacific, 2/15/2008-3/3/2009, \$15,000, (Cassibry \$15,000).
3. "Modeling of Plasma Jets Driven Magneto-inertial Fusion using SPHC," Jason Cassibry (PI), HyperV Technologies, Inc., 10/1/2008-2/28/09, \$5,996, (Cassibry \$5,996).
4. "Advanced MET fueled by water with plume diagnostics and modeling," Chris St. Clair (PI, ORBITEC), Jason Cassibry (PI on subcontract to Orbitec), NASA STTR Topic T3.01 Space Power and Propulsion, 1/1/09 – 12/31/09, \$100,000, (Cassibry \$32,785).
5. "Modeling of Plasma Jets Driven Magneto-inertial Fusion using SPHC," Doug Witherspoon (PI, HyperV Technologies, Inc.), Jason Cassibry (PI on subcontract to HyperV Technologies, Inc.), U.S. Department of Energy Annual Phase I Small Business Innovation Research (SBIR) funding opportunity (DE-PS02-08ER08-34) subtopic 57c high energy density laboratory plasmas (HEDLP) and magneto-inertial fusion, 7/1/09 – 4/1/10, \$100,000, (Cassibry \$9,837).
6. "Development of Radiation and Atomic Physics Modeling to Support High-Fidelity Simulation," Joe MacFarlane Prism (PI, Prism Sciences, Inc.), Jason Cassibry (PI on subcontract from Prism Sciences), U.S. Department of Energy Annual Phase I Small Business Innovation Research (SBIR) funding opportunity (DE-FOA-0000413), 6/1/2011-2/29/2012, \$100,000, (Cassibry \$26,998).
7. Principal Investigator, "Modeling of the Plasma Liner Experiment," subcontract from Tech-X, portion of DOE SBIR Phase II award, 8/15/2011-8/14/2012, \$88,315, (Cassibry \$88,315).
8. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2010-7/31/2011, \$10,000, (Cassibry \$10,000).
9. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2011-7/31/2012, \$5,000, (Cassibry \$5,000).
10. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2012-7/31/2013, \$5,000, (Cassibry \$5,000).
11. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2013-7/31/2014, \$5,000, (Cassibry \$5,000).
12. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2014-7/31/2015, \$5,000, (Cassibry \$5,000).
13. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company,

- 8/1/2015-7/31/2016, \$10,000, (Cassibry \$10,000).
14. "Charger-1 for the University of Alabama in Huntsville (UAH) Boeing Research and Technology Project 16740," Jason Cassibry (PI), The Boeing Company, 6/18/15-12/18/15, \$150,000.00 (Cassibry, PI, \$150,000.00).
 15. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2016-7/31/2017, \$10,000, (Cassibry \$10,000).
 16. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2017-7/31/2018, \$10,000, (Cassibry \$10,000).
 17. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2018-7/31/2019, \$10,000, (Cassibry \$10,000).
 18. "Development of a Course for Fusion Propulsion," Jason Cassibry (PI), The Boeing Company, 8/1/2019-7/31/2020, \$10,000, (Cassibry \$10,000).
 19. "Exploration of Pulsed Breakeven Fusion at 100 kJ Energy for Breakthrough Propulsion," Jason Cassibry (PI), Limitless Space Institute via Texas A&M Engineering Experiment Station, \$108,469, (Cassibry \$108,469).

University (\$74,786 as PI or Co-I)

1. "Theoretical Modeling for Plasma Propulsion," Jason Cassibry (PI), Propulsion Research Center, University of AL in Huntsville, funding supported by Shelby Propulsion Research Initiative and NASA MSFC, 10/1/2003-8/15/2006, \$218,142 PI: Dr. Clark Hawk, (Cassibry \$218,142).
2. "Startup funds for tenure earning assistant professor position with Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville," Jason Cassibry (PI), 9/1/2006-8/31/2008, \$35,200, (Cassibry \$35,200).
3. "Improved thrust and exhaust speed measurements on a plasmoid thruster with bias flux," J. Cassibry (PI), UAH Minigrant, 1/1/2008-12/31/2008, \$10,178, (Cassibry \$10,178).
4. "Development of a 1D Flowfield Dependent Variational Method for Magnetohydrodynamics," G. Richardson (Co-PI), J. Cassibry (Co-PI), University Research Infrastructure Investment Grant Program 2007-2008, UAHuntsville, 5/1/2008-4/30/2009, \$35,147, (Cassibry \$17,000).
5. "Energy Yield Calculations and Hardware Development for Fusion Propulsion Research utilizing Charger 1," J. Cassibry (PI), UAH Industry University Partnership, 1/1/2014-5/7/2014, \$9,208 (Cassibry \$9,208).
6. "Research and Creative Experiences for Undergraduates, Modeling of the Charger 1 Pulsed Power Circuit" J. Cassibry (PI), UAH RCEU, \$3,200 Stipend for Mr. Coleton Cody, undergraduate student (Cassibry \$3,200).
7. "Research and Creative Experiences for Undergraduates, Modeling of the Charger 1 Pulsed Power Circuit" J. Cassibry (PI), UAH RCEU, \$3,200 Stipend for Mr. Coleton Cody, undergraduate student (Cassibry \$3,200).
8. "Research and Creative Experiences for Undergraduates, Development and Testing of Magnetic Field Probes for Pulsed Fusion" J. Cassibry (PI), UAH RCEU, Stipend for Ms. Shelby Westrich, undergraduate student.
9. "Research and Creative Experiences for Undergraduates, Design and Testing of a Capacitively Coupled High Voltage Sensor" J. Cassibry (PI), UAH RCEU, Ms. Bailey Gregory, undergraduate student.
10. "Research and Creative Experiences for Undergraduates, Optically Isolated Control of a Pulsed Power System" J. Cassibry (PI), UAH RCEU, Stipend for Mr. Logan Curtis.

Awarded, but not funded

“Gallium Electromagnetic Accelerator for In-Space Propulsion,” Thomas Markusic (PI, NASA MSFC), Iain Boyd (Co-I U. Mich.), Rodney Burton (Co-I, UIUC), J. Monheiser (Co-I, Aerojet), Jason Cassibry (Co-I), NASA NRA, NNH04ZSS001N-CIEP, submitted 4/30/2004, 6 month phase I grant with possible renewal up to 3 years total, (this proposal won, but was never funded due to changes in agency research priorities prior to awarding of funds), 9/1/2004-8/31/2007, \$1,592,500 (Cassibry \$185,325).

Submitted/Pending

1.

SERVICE

Service to the institution (department, college, and university)

1. Graduate Advisor for Aerospace Engineering (Fall 2016 - present)
2. Member of MAE Graduate Student Committee (Fall 2014 - present)
3. Member of MAE graduate faculty (Fall 2005 - present)
4. Course Coordinator for MAE 343 (Fall 2014-2018), 441 (Fall 2014 - present)
5. Gave lectures on Aerospace Engineering to First Year Engineering Students (Fall 2019)
6. Gave lecture to Honor’s students on Interstellar Propulsion (Fall 2019)
7. Two Faculty Search Committees for ECE (Spring 2020)
8. Faculty Search Committee for Space Science Department (Spring 2020)
9. Reappointment committee for Space Science dept for Haihong Che, (Spring 2020)
10. Reappointment committee for Dr. Aubrey Beal in ECE (Spring 2020)
11. Reappointment committee for Department of Civil Engineering, Abdullahi Salman (Spring 2020)
12. Reappointment committee for ECE, Ron Bowman (Spring 2020)
13. Reappointment committee for ECE, Dennis Hite (Spring 2020)
14. Advised an undergraduate group for their senior design project in Electrical Engineering (Spring 2019)
15. Preliminary Action Officer (Summer 2018)
16. Reappointment committee for Department of Civil Engineering, Abdullahi Salman
17. Reappointment committee for Department of Mechanical and Aerospace Engineering, UAH
18. Faculty Search Committee for Aerospace engineering
19. Reappointment Committee for Tingting Wu
20. Reappointment Committee for Nick Zhou
21. Member of Tenure and Promotion committee for Qiang Hu
22. Chair of reappointment committee for Felix Ewere
23. Chair of reappointment committee for Richard Tantarisis
24. Chair of tenure and promotion committee for Kunning xu
25. Routinely write letters of recommendation for faculty and students.
26. Wrote reappointment letter for Dr. Kunning Xu in MAE.
27. Hosted prospective students (Kenneth Talbott 2017 HS student – KY) visiting campus coordinated by Campus Visit Coordinator
28. Hosted prospective students (Michael Thompson) visiting campus coordinated by COE
29. Charger Preview Participant (2017, 2018)
30. Master's committee of Benjamin Lund
31. Worked with department chair, graduate committee chair, and mechanical engineering graduate advisor to update the department and University websites

32. Conducted Fullbright fellowship interview with Tal Wammen and reviewer of application
33. Conducted video for promotional profile video for COE
34. Reviewer of student paper for Perpetua Journal (UAH)
35. Represented UAH booth at expo for Leadership Huntsville's Connect Program Innovation Day
36. Give Tour of Charger 1 Fusion Propulsion lab
37. Chair of reappointment committee for Felix Ewere
38. Wrote letter of recommendation for Qiao Dong
39. Member of reappointment committee for Mr. Dennis Hite in ECE Dept.
40. Member of reappointment committee for Mr. Ron Bowman in ECE Dept.
41. Member of reappointment committee for Dr. Wu in Civil Engineering
42. Member of reappointment committee for Qiang Hu in CSPAR
43. Chair of reappointment committee for Armentrout
44. Chair of reappointment committee for Fikes
45. Nominated Dr. Phillip Ligrani for Hermann Oberth award
46. Regularly host prospective students visiting campus coordinated by Campus Visit Coordinator
47. Gave 1 hour presentation on Aerospace Engineering to FYE students (Fall 2015, Spring 2016)
48. Gave tour to Aerophysics Research Center for guests of OVPR
49. ABET auditor interviewee for MAE Department
50. Wrote letter of recommendation for Dr. Phil Ligrani
51. Wrote letter of recommendation for Mr. Anthony Edmondson for UAH Staff award
52. Served as Associate Director for New Technology and Administration for the Propulsion Research Center during the medical leave of the director from December 2015 to March 2016.
53. Host for prospective students, coordinated with Campus Visit Coordinator
54. Jemison College Academy Student Selection Committee (2015)
55. SACS (Southern Association of Colleges and Schools) committee
56. SACS College of Engineering, Learning Resources Subcommittee
57. Faculty Awards for Excellence Review Committee
58. UAH Vice President of Research Search Committee (August 2012 to March 2013)
59. UAH Ad hoc Research Committee commissioned by the Faculty Senate President (Fall of 2012 and April 2014).
60. UAH MAE Program Advisory Board
61. PhD preliminary exam author for Fluids and Thermodynamics Tests
62. InSPIRESS PDF Review Board (Presentation review for UAH high school outreach initiative), September 2012.
63. Member of the UAH Honors Faculty
64. Member of MAE faculty search committee.
65. Member of MAE faculty search committee for Eminent Scholar in Propulsion position
66. Member of MAE graduate faculty
67. Presentation of fusion propulsion research to UAH COE Engineering Advisory Board, March 1, 2013.
68. Presentation of fusion propulsion research to UAH Alumni Lunch and Learn, February 20, 2013.
69. Participant in student organized Program for UAH Student Residents, 'Pizza with Professors', September 26, 2012.
70. Course Coordinator for MAE 420, 441

71. Technical Program Chair for the Student Poster Session of the 4th Wernher von Braun Memorial Symposium sponsored by the American Astronomical Society, October 24-26, 2011, UAHuntsville (~45 papers given).
72. Reviewer of student activities and proposals:
 - a) Aerojet Scholarship
 - b) aesthetics on MAE 100 student projects
 - c) Research Experiences for Undergraduates.
73. External Observer for M.S. and Ph.D. Theses and Dissertations.
74. Chair of Sigma Gamma Tau Aerospace Engineering Honor Society (2008-present)
75. Member of the Faculty Senate (finance and means committee) 2009-2012.
76. Panelist at the UAHuntsville New Faculty Orientation Workshop, August 2010.
77. Guest speaker for classes and student run organizations
 - a) ASME student chapter
 - b) PH 110 Frontiers in Science course
 - c) MAE 200.
 - d) UAHuntsville AIAA student meeting.
78. ABET Audit Committee
79. Program Advisory Board of the MAE department for aerospace engineering.
80. Aerospace Undergraduate Committee.
81. Planned Dr. S. T Wu's retirement party.

Service to the discipline

1. Associate Editor for the AIAA J. of Spacecraft and Rockets (2019-2022)
2. Chair of the Nuclear and Future Flight Technical Committee for AIAA (2020-2022)
3. Reviewer for peer reviewed journals
 - a) AIAA Journal
 - b) AIAA Journal of Propulsion and Power
 - c) AIAA Journal of Spacecraft and Rockets
 - d) AIAA Journal of Thermophysics and Heat Transfer
 - e) AIP Physics of Plasmas
 - f) Aircraft Engine and Aerospace Technology
 - g) Journal of Thermophysics and Heat Transfer
 - h) IEEE Transactions on Plasma Science
 - i) Journal of the British Interplanetary Society article
 - j) Computational Material Science
 - k) Journal of Fusion Energy
 - l) Acta Astronautica
 - m) Applied Physics Letters
 - n) Fusion Engineering and Design
 - o) Nuclear Technology
4. Reviewer for proposals to these agencies
 - a) NASA
 - b) DOE
 - c) DOE Advanced Scientific Computing Research
 - d) NSF
 - e) Oak Ridge Institute for Science and Education
5. Reviewer for these books
 - a) Moon Base and Beyond, by Margaret Morris
 - b) Chapter of the following book: "Introduction to Aerothermodynamics and Jet Engine

- Propulsion,” Cambridge University Press
- c) Airbreathing Propulsion Book proposal from Wiley
6. Panelist
- a) “Enabling Broader Participation in Developing Breakthrough Science and Technologies: Perspectives from Scientists and Science Educators”, May 22, 2011, International Space Development Conference in Huntsville, AL.
- b) Panel reviewer for NASA Space Technology Research Institute (February 2019)
- c) Panelist for “Nuclear Enabled Propulsion” at the ASCEND (November 17, 2020)
7. Session chair for these conferences
- a) AIAA Aerospace Science Meeting
- b) Nuclear and Emerging Technologies for Space workshop
- c) AIAA Joint Propulsion Conference
- d) AIAA Plasmadynamics and Lasers Conference
- e) AIAA Propulsion and Energy Forum
8. Member of these technical planning committees
- a) AIAA Plasmadynamics and Lasers Technical Committee (2006-2012).
- Responsible for web page updates for AIAA Plasmadynamics and Lasers committee (2006-2009)
 - Technical Area Organizer for sessions in 2011
- b) AIAA Nuclear and Future Flight Committee (NFFTC) (2011-present).
- Technical Area Organizer for NFFTC sessions at AIAA Propulsion and Energy Forum (2015, 2016)
 - Vice Chair of NFFTC (2017, 2018)
 - Chair of NFFTC (2020, 2021)
 - Organized Advanced Space Propulsion Workshop for AIAA Aerospace Science Meeting, January 2011.
9. Reviewer for abstracts submitted to these conferences
- a) AIAA Plasmadynamics and Lasers Conference
- b) AIAA Aerospace Science Meeting
- c) AIAA Joint Propulsion Conference
- d) AIAA Propulsion and Energy Forum
10. National Research Council Assessment of Research-Doctorate Programs Questionnaire.
11. Judge for SAIC Case Competition

Other service activities

1. Consulting to International Space Systems, Inc and NASA MSFC for magnetohydrodynamic modeling of MPD thrusters and Particle-In-Cell code development.
2. Written ~150 letters of recommendation since 2004 on behalf of students and professionals for scholarships, fellowships, University applications, and employment.