

JACOB A. ROGERS

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EDUCATION

Texas A&M University

2019–2023

J. Mike Walker '66 Department of Mechanical Engineering

PhD in Mechanical Engineering, GPA: 4.0

Fellow, National Science Foundation

President, MEGSO | Graduate Ambassador, TAMU MEEN

Mississippi State University

2015–2019

Bagley College of Engineering | Shackouls Honors College

BS in Aerospace Engineering, *Concentration in Astronautics*, GPA: 4.0

RESEARCH EXPERIENCE

Probing Geometric Scaling Effects on Impact Phenomena

Jan 2023 – present

Advisor(s): Drs. Thomas Lacy, Jr. & Justin Wilkerson

Committee: Drs. Edwin (Ned) Thomas, Waruna Kulatilaka, Brian Schuster, J.N. Reddy

- Conducting a comprehensive study leveraging the laser-induced projectile impact test (LIPIT) to examine micro-projectile and target responses to high strain rate deformation, focusing on the influence of geometric scale.
- Utilizing LIPIT to controllably launch single microparticles to precisely ascertain projectile momentum and kinetic energy before and after impact.
- Applying the LIPIT experiments across various material systems including polymers, gels, and metals to observe diverse dynamic responses and impact energy absorption.
- Investigating geometric-scale effects by launching noncrystalline alumina spheres of varying diameters into scaled polycarbonate targets using both LIPIT (microscale) and a gas gun (macroscale).
- Analyzing a broad spectrum of impact energies, spanning from hundreds of joules to nanojoules, to determine specific impact energy absorption, local plastic deformation, and deformation microstructure across scales.
- Conducting numerical impact simulations to elucidate the influence of length scale on strain and heating rates.
- Providing critical insights to propel the development of high-throughput methods, fostering accelerated material discovery by revealing implications of geometric scale on dynamic material behavior.

Hypervelocity Impact (HVI), Hypersonic, and Novel Materials Research

May 2020 – present

Advisor(s): Drs. Thomas Lacy, Jr. & Justin Wilkerson

Committee: Drs. Edwin (Ned) Thomas, Waruna Kulatilaka, Brian Schuster, J.N. Reddy

- Researching HVI phenomena and lightweight, strain-rate-tuned materials and material structures that are tailored to maximize hypervelocity/hypersonic energy dissipation for military and space applications.
- Probing the effects of crystallinity and molecular structure on the energy dissipation observed upon subjecting polyethylenes (PEs) to HVIs at normal and oblique angles over the velocity range attainable.
- Studying HVIs to PEs at various temperatures, thicknesses, lamination, *etc.*
- Using experimental results and material characterization in conjunction with MD simulations to understand PE damage response fundamentally and to construct, validate, and inform multi-scale material computational models.
- Investigating environmental effects (*e.g.*, ice, snow, rain, volcanic dust) on hypersonic/hypervelocity projectiles/vehicles. Shock-shock, shock-particle, shock-projectile, and impact interactions are being probed.
- Developing novel high-rate diagnostic (ultra-high speed schlieren imaging, multi-angle imaging, *etc.*) and experimental (*e.g.*, hypervelocity simultaneously launched, distributed particles) methods.
- Managing a team of ~20 HVIL graduate and undergraduate student researchers.
- Mentoring multiple year-long capstone design teams in designing, developing, and implementing HVIL equipment.
- Conducted over 500 full-scale HVI and hypersonic experiments (as of 08/2023) for various research applications.
- Responsible for developing and maintaining the **Materials for Extreme Environments/HVIL research website**.
- Other projects include studying HVI impact phenomena to additional materials/structures (*e.g.*, composites, polymers, metals, concretes, ceramics), investigating HVI-induced shock waves in biomimetic materials, *etc.*

HVI Research and Laboratory Development

July 2019 – May 2020

Texas A&M University, Graduate Research Assistant, Advisor(s): Dr. Thomas Lacy & Dr. Justin Wilkerson

- o Led the effort to establish the TAMU Hypervelocity Impact Laboratory (HVIL) that is currently being used to study the effects of hypervelocity (1.5–8.0 km/s) impacts on metals, composites, polymers, soft materials, *etc.*
- o Oversaw the complete installation and calibration of the 12.7 mm bore two-stage light gas gun (2SLGG), corresponding aeroballistic range, and supporting diagnostic instruments.
- o Led six undergraduate design team students in designing, developing, and fabricating a robust specimen fixture capable of facing the harsh environment resulting from HVIs.
- o The TAMU HVIL has been fully operational since January 2020 and is equipped with a 2SLGG and modern diagnostic instruments, including ultra-high speed camera (10M fps), flash X-ray system, *etc.* Please see the HVIL [research page](#) for more details.

HVI Testing on Polymeric Materials

Jan 2018 – Dec 2018

Mississippi State University, Advisor(s): Dr. Thomas E. Lacy Jr., PE & Hunter Bowering

- o Researched the effects of hypervelocity (3–7 km/s) impacts on polymeric materials to develop tailored lightweight material structures to arrest hypervelocity projectiles.
- o Analyzed impacted specimens for energy dissipation using energy estimation methods, post-impact forensic techniques, and *in-situ* images from a high speed (5 million fps) camera.
- o Assisted in the development and installation of a 5.6 mm bore 2SLGG capable of accelerating 4 mm projectiles to 2–7 km/s. Conducted ~50 full-scale experiments.

Robust and Accurate Indoor Positioning System Development

Jan 2018 – May 2019

Mississippi State University, Advisor(s): Dr. Donghoon Kim

- o Constructed indoor positioning system using ultra-wide band (UWB) ranging sensors.
- o Researched ways to reduce sensor noise and make the IPS a more accurate and robust environment.
- o Modified extended Kalman filter algorithm for implementation in dynamic scenarios.
- o Successfully implemented modified Kalman filtering algorithms with updating measurement error covariance distributions to UWB sensors to decrease noise and provide sub-centimeter accurate positioning.

Innovative CubeSat Development

Aug 2016 – Aug 2017

Mississippi State University, Advisor(s): Dr. Keith Koenig

- o Designed satellites consisting of structure, avionics, mechanisms, and autonomous computer systems.
- o Designed and 3D printed mechanisms and structures in house to allow customization and reduce costs.
- o Constructed multiple fully-functioning prototypes and tested them using high-altitude weather balloons.

PROFESSIONAL EXPERIENCE

Texas A&M University | Graduate Teaching Assistant | College Station, TX

Aug 2023 – Present

- o Actively facilitating learning to ~40 MEEN graduate students as a Graduate Teaching Assistant for Introduction to Finite Elements (MEEN 672).
- o Conducting weekly office hours, providing crucial support and clarification on complex mathematical and physical concepts to enhance student understanding.
- o Ensuring clear and comprehensive feedback by typing and grading homework and exam solutions, in addition to proctoring exams to maintain academic integrity.

NASA Marshall Space Flight Center | Intern | Huntsville, AL

May 2017 – Aug 2017

- o Systems engineering and integration for the Space Launch System (SLS) for Validation and Verification.
- o Worked on Function Integration Task (FIT) Team to implement SLS-allocated ESD Requirements.
- o Developed code that increased autonomy in functional mapping that is currently being implemented.
- o Presented accomplishments to FIT Team, branch chief, and NASA MSFC Summer Internship Seminar.

Mississippi State University | Teaching Assistant | Starkville, MS

Aug 2016 – Dec 2017

- o Taught 120+ aerospace students CAD (SolidWorks and Creo) software.
- o Instructed students on data acquisition and analysis.
- o Designed and graded various CAD projects (satellites, rockets, aircraft).
- o Designed and aided with design build test (DBT) projects to teach students the engineering/design process.

SKILLS & INTERESTS

MATLAB | expert
LaTeX | expert
Fortran | proficient
Arduino | proficient

SolidWorks & Creo | expert
AGI STK | proficient
LabView | proficient
Mathematica | proficient

Other Skills: optical microscopy/profilometry, data presentation, data collection, statistical analysis, finite element analysis, flash X-ray radiography, ultra-high speed diagnostics, prototyping, carpentry, machining, additive manufacturing, laboratory management, mentoring, editing/reviewing, website design, laser-induced projectile impact test (LIPIT), optical profilometry, optical microscopy (OM)

Research Interests: solid mechanics, hypervelocity impacts, hypersonics, ultra-high strain rate materials, micrometeoroid/orbital debris (MMOD) impacts, materials for extreme environments, impact scale studies

EDITORIAL SERVICE

- *Review of Scientific Instruments*, AIP, (2022–present).
- *Journal of Dynamic Behavior of Materials*, Springer, (2022–present).
- *IEEE Transactions on Aerospace and Electronic Systems*, IEEE, (2022–present).

MEMBERSHIP & INVOLVEMENT

- **Council Member**, TAMU Mechanical Engineering Leadership Council, Aug 2022 – Present.
Description: A council consisting of MEEN organizations, departmental faculty, and departmental leadership that meets each month to review and address key issues with departmental organization, academics, facilities, finances, etc.
- **Committee Member**, TAMU Mechanical Engineering Graduate Studies Committee, Aug 2022 – Present.
Description: A departmental committee (8 faculty members and 2 graduate students) whose goal is to address various issues and topics of interest within the graduate program, including graduate courses, program fees/budgets, etc.
- **President**, Mechanical Engineering Graduate Student Organization (MEGSO), May 2022 – May 2023.
Description: Host social and technical events to support graduate students. Recruited a diverse set of officers (18 men and women in various research fields). Develop relevant resources (e.g., MEGSO website). Departmental organization.
- **Graduate Ambassador**, Mechanical Engineering Graduate Student Ambassador Program, Nov 2021 – Present.
Description: Provide a peer-to-peer perspective to prospective and current graduate students, as well as offer counsel and advice from a unique perspective. This role was served as part of a departmental organization.
- **Tech. Affairs V.P.**, Mechanical Engineering Graduate Student Organization (MEGSO), Aug 2021 – May 2022.
Description: Oversaw all MEGSO technical resource development and events, including the annual research poster competition. This role was served as part of a departmental organization.
- **Website Developer/Manager**, Hypervelocity Impact Laboratory (HVIL), June 2020 – Present.
Description: Designed and developed the Materials for Extreme Environments (MEE) and Hypervelocity Impact Laboratory website. Currently manage changes/updates to the website, including publications, news, and events postings.
- **Senior Capstone Design Team Mentor**, TAMU College of Engineering, Aug 2019 – Present.
Description: Mentor and guide roughly 3 undergraduate design teams per year working on year-long senior capstone projects. This position was/is served through my lab/group, the Hypervelocity Impact Laboratory.
- **Sigma Xi Scientific Research Honor Society Member**, TAMU, June 2020 – Present.
- **Student/Researcher Member**, International Ballistic Society (IBS), April 2020 – Present.
- **Student/Researcher Member**, American Society of Mechanical Engineers (ASME), April 2020 – Present.
- **Nominee and Student/Researcher Member** Tau Beta Pi Honors Society, April 2018 – Present.
- **Nominee and Student/Researcher Member** Phi Kappa Phi Honors Society, August 2017 – Present.
- **Nominee, Member, and Secretary (2017–2018)**, Sigma Gamma Tau Honors Society, August 2016 – Present.
- **Member and Treasurer (2016–2017)**, American Institute of Aeronautics/Astronautics, January 2016 – Present.
- **Chief Design Engineer**, Mississippi State University CubeSat Team, May 2016 – August 2017.

HONORS & AWARDS

- **2023 ARA Student Award**, Aeroballistic Range Association (ARA), June 2023.
Description: Competitive award granted to eligible students through a nomination and application evaluation.
- **Outstanding Graduate Ambassador Award**, TAMU Department of Mechanical Engineering, Aug 2023.
Description: Award for dedicated service and significant contributions to the graduate program and support of the graduate office.

- **Dr. C. M. Simmang Ph.D. Fellowship**, TAMU Department of Mechanical Engineering, June 2023.
Description: Award for academic and research performance and demonstrated leadership.
- **Graduate Summer Research Grant**, TAMU Department of Mechanical Engineering, May 2023.
Description: Competitive awards provided to graduate students through a nomination and proposal evaluation.
- **J. Mike Walker '66 Impact Award**, Department of Mechanical Engineering, TAMU, October 2022.
Description: Competitive award given to two male and two female graduate students. Awardees must demonstrate academic/scholarly achievements, as well as have leadership and/or entrepreneurial focus/experience.
- **GREAT Program Recipient**, TAMU Graduate and Professional School, June 2022 - Present.
Description: Stipend supplement award for nationally competitive external fellowship recipients.
- **Alex Charters Student Scholar Award**, Hypervelocity Impact Society (HVIS), June 2022.
Description: Competitive award granted to eligible students through a nomination and application evaluation.
- **2022 ARA Student Award**, Aeroballistic Range Association (ARA), June 2022.
Description: Competitive award granted to eligible students through a nomination and application evaluation.
- **Graduate Student Travel Award**, TAMU Department of Mechanical Engineering, July 2022.
Description: Graduate student award to support travel to conferences and other professional meetings.
- **Student Excellence Award**, University Consortium for Applied Hypersonics (UCAH), March 2022.
Description: Competitive award and recognition provided to best presenter/presentation at UCAH Forum.
- **Graduate Research Fellowship Program (GRFP)**, National Science Foundation (NSF), April 2020 – Present.
Description: Nationally competitive 5-year fellowship with 3 years of support (stipend + tuition).
- **Graduate Summer Research Grant**, TAMU Department of Mechanical Engineering, April 2020.
Description: Competitive awards provided to graduate students through a nomination and proposal evaluation.
- **Graduate Merit Fellowship**, TAMU Department of Mechanical Engineering, April 2019.
Description: Competitive graduate fellowship awarded in initial funding package (distributed over 3 years).
- **Graduate Invitational Recipient**, TAMU Department of Mechanical Engineering, April 2019.
Description: An event provided to top incoming graduate students as an opportunity to explore TAMU resources.
- **SMART Scholarship**, DoD Science, Mathematics, & Research for Transformation Program, April 2019.
Description: Competitive fellowship that provides tuition, annual stipends, etc. Declined due to receipt of NSF award.
- **Student of the Year Award**, Mississippi State University Dept. of Aerospace Engineering, April 2019.
- **Stephen D. Lee Scholar Award**, Mississippi State University, April 2019.
- **First Place Presentation Award**, Mississippi State University Spring Research Symposium, April 2019.
- **First Place Presentation Award**, Mississippi State University Summer Research Symposium, August 2019.
- **Engineering Research Fellowship**, Mississippi State University, September 2018 – May 2019.
- **Honors Research Fellowship**, Mississippi State University Shackouls Honors College, May 2018 – May 2019.
- **NASA Space Grant Recipient**, Mississippi State University, January 2016 – May 2019.
- **Valedictorian Scholarship**, Mississippi State University, August 2015 – May 2019.
- **Get 2 College Scholarship**, Mississippi State University, August 2015 – August 2016.

INVITED TALKS & PRESENTATIONS

- Rogers JA, “Size Matters: Ballistic Impact Across 11 Decades of Kinetic Energy,” *Sandia National Labs Visit and Seminar*, Albuquerque, NM, Jan 16, 2024.
- Rogers JA, “Mach 5 and Beyond: Hypersonic Threats, Innovative Defense Strategies, and Cutting-Edge Research,” *Fundamentals of Maneuver Warfare Course Special Guest Lecture*, College Station, TX, Nov 9, 2023.
- Rogers JA, Lacy Jr TE, “The 73rd Meeting of the Aeroballistic Range Association Announcement,” *72nd Meeting of the Aeroballistic Range Association (ARA)*, Tokyo, Japan, Sep 15, 2023.
- Rogers JA, “Materials for Extreme Environments,” *Spring 2022 Engineering Graduate Invitational*, Texas A&M University, College Station, TX, March 3, 2022.

PEER-REVIEWED JOURNAL PAPERS

1. **Rogers JA**, Bass N, Wiest M, Wantz Z, Wilkerson JW, Lacy Jr TE, “The Pursuit of Hypervelocities: A Review of Two-Stage Light Gas Gun Aeroballistic Ranges,” *International Journal of Impact Engineering*, Volume 185, 2024, 104861, ISSN 0734-743X, <https://doi.org/10.1016/j.ijimpeng.2023.104861>.
2. Mead PT, **Rogers JA**, Williams N, Wilkerson JW, Lacy Jr TE, “Simulating Hypervelocity Impacts to Monolithic High-Density Polyethylene Plates,” *Preprint submitted to the American Institute of Aeronautics and Astronautics (AIAA) Journal*, Preprint available at <https://doi.org/10.31224/3205>.

3. **Rogers JA**, Lukasik G, Mead P, Mote A, Wilkerson JW, Kulatilaka WD, Lacy Jr TE, “Mechanics of Hypervelocity Simultaneously Launched Distributed Particles,” *International Journal of Impact Engineering*, Volume 180, 2023, 104671, ISSN 0734-743X, <https://doi.org/10.1016/j.ijimpeng.2023.104671>.
4. **Rogers JA**, Bass N, Mead PT, Mote A, Lukasik GD, Intardonato M, Harrison K, Leaverton JD, Kota KR, Wilkerson JW, Reddy JN, Kulatilaka WD, and Lacy TE, “The Texas A&M University Hypervelocity Impact Laboratory: A Modern Aeroballistic Range Facility,” *Review of Scientific Instruments*. Volume 93, 2022, 085106, <https://doi.org/10.1063/5.0088994>. **Editor’s Pick. Featured on journal homepage.**
5. **Rogers JA**, Mote A, Mead P, Harrison K, Lukasik G, Kota K, Kulatilaka W, Wilkerson J, Lacy Jr TE, “Hypervelocity Impact Response of Monolithic UHMWPE and HDPE Plates,” *International Journal of Impact Engineering*, Volume 161, 2022, 104081, ISSN 0734-743X, <https://doi.org/10.1016/j.ijimpeng.2021.104081>.

CONFERENCE PAPERS

1. **Rogers JA**, Xaio K, Mead P, Wilkerson J, Thomas EL, Lacy Jr TE, “The Influence of Geometric Scale on High-Velocity Impact Phenomena: From Micro- to Macro-Scale,” in the *Proceedings of the 72nd Meeting of the Aeroballistic Range Association (ARA)*, Tokyo, Japan, Sep 10–16, 2023.
2. Harrison K, **Rogers JA**, Lukasik GD, Kulatilaka WD, Lacy Jr TE, “A Study of High-Temperature Composites Subjected to Hypervelocity Impacts Using Simultaneously Launched Distributed Particles,” in the *Proceedings of the JANNAF 1st High Temperature Material Applications (HTMAS) Joint Subcommittee Meeting*, Pittsburgh, Pennsylvania, May 22–26, 2023.
3. Lukasik G, Schweizer C, **Rogers JA**, Lacy Jr TE, and Kulatilaka WD, “Ultra-High-Speed Digital In-Line Holography for Three-Dimensional Tracking of Hypervelocity Projectiles,” in the *Proceedings of the AIAA SciTech 2023 Forum*, National Harbor, MD, January 23–27, 2023. <https://doi.org/10.2514/6.2023-0805>.
4. **Rogers JA**, Mead P, Wilkerson J, Lacy Jr TE, and Williams N, “Simulating Hypervelocity Impacts to High-Density Polyethylene,” in the *Proceedings of the AIAA SciTech 2023 Forum*, National Harbor, MD, January 23–27, 2023. <https://doi.org/10.2514/6.2023-2021>.
5. **Rogers JA**, Lukasik G, Martin B, Mead P, Mote A, Wilkerson JW, Kulatilaka W, and Lacy Jr TE, “In-situ Characterization of Hypervelocity Simultaneously Launched Distributed Particles,” in the *Proceedings of the 16th Hypervelocity Impact Symposium*, Alexandria, VA, September 18–22, 2022. **Alex Charters Scholar Award.**
6. **Rogers JA**, Lukasik G, Mead P, Harrison K, Mote A, Kota KR, Wilkerson JW, Kulatilaka W, and Lacy Jr TE, “The Texas A&M University Hypervelocity Impact Laboratory: A State-of-the-Art Facility for High-Rate Materials Characterization,” in the *Proceedings of the 16th Hypervelocity Impact Symposium*, Alexandria, VA. September 18–22, 2022.
7. Mead P, **Rogers JA**, Intardonato M, Lukasik G, Wilkerson JW, Kulatilaka W, Vankirk GH, and Lacy Jr TE, “Hypervelocity Impact Response of High Performance Concrete Targets of Varying Thickness,” in the *Proceedings of the 16th Hypervelocity Impact Symposium*, Alexandria, VA, September 18–22, 2022.
8. **Rogers JA**, Lukasik G, Mead P, Harrison K, Mote A, Kota KR, Wilkerson JW, Kulatilaka W, and Lacy Jr TE, “The Texas A&M University Hypervelocity Impact Laboratory: A Modern Aeroballistic Range Facility for High-Rate Materials Characterization,” in the *Proceedings of the 71st Aeroballistic Range Association (ARA) Meeting*, Königswinter, Germany, July 31–August 6, 2022. **2022 Student Participation Award Recipient.**
9. Lukasik G, **Rogers JA**, Kota KR, Bowersox RD, Lacy Jr TE, and Kulatilaka WD, “Ultra-Highspeed Optical Diagnostics of Water Droplet Impact, Breakup and Shock Boundary Layer Interactions of Hypervelocity Projectiles,” in the *Proceedings of the AIAA SciTech 2022 Forum*, San Diego, CA, January 3–7, 2022. <https://doi.org/10.2514/6.2022-1656>.
10. **Rogers J**, Mead P, Harrison K, Kota K, Leaverton J, Lukasik G, Kulatilaka W, Wilkerson J, Lacy Jr TE, “Hypervelocity Impact Response of Polyethylene Plates,” in the *Proceedings of the AIAA SciTech 2021 Forum*, Virtual, January 11–15 & 19–21, 2021. <https://doi.org/10.2514/6.2021-0887>.
11. Lukasik G, **Rogers J**, Kota K, Wilkerson J, Lacy Jr TE, Kulatilaka W, “Application of Digital Particle Tracking and Schlieren Imaging to Study Debris Cloud and Shockwave Formation During Hypervelocity Impacts,” in the *Proceedings of the AIAA SciTech 2021 Forum*, Virtual, January 11–15 & 19–21, 2021. <https://doi.org/10.2514/6.2021-0725>.
12. Harrison K, Kota K, **Rogers J**, Mead P, Mote A, Kulatilaka W, Wilkerson J, Lacy Jr TE, “Hypervelocity Impact Response of Stitched CFRP Laminates,” in the *Proceedings of the 2021 American Society for Composites Conference*, Virtual, September 14–18, 2021. <https://doi.org/10.12783/asc36/35800>.

CONFERENCE PRESENTATIONS

1. **Rogers JA**, Xaio K, Mead P, Wilkerson J, Thomas EL, Lacy Jr TE, “The Influence of Geometric Scale on High-Velocity Impact Phenomena: From Micro- to Macro-Scale,” presented at the *72nd Meeting of the Aeroballistic Range Association (ARA)*, Tokyo, Japan, Sep 10–16, 2023.
2. Harrison K, **Rogers JA**, Lukasik GD, Kulatilaka WD, Lacy Jr TE, “A Study of High-Temperature Composites Subjected to Hypervelocity Impacts Using Simultaneously Launched Distributed Particles,” presented at the *JANNAF 1st High Temperature Material Applications (HTMAS) Joint Subcommittee Meeting*, Pittsburgh, Pennsylvania, May 22–26, 2023.
3. **Rogers JA**, Xaio K, Sang Z, Lukasik G, Wilkerson J, Thomas EL, Lacy Jr TE, “The Influence of Geometric Scale on High-Velocity Impact Phenomena: From Micro- to Macro-Scale,” presented at the *MACH 2023 Conference*, Towson, Maryland, April 5–7, 2023.
4. Lukasik G, Schweizer C, **Rogers JA**, Lacy Jr TE, and Kulatilaka WD, “Ultra-High-Speed Digital In-Line Holography for Three-Dimensional Tracking of Hypervelocity Projectiles,” presented at the *AIAA SciTech 2023 Forum*, National Harbor, MD, January 23–27, 2023.
5. **Rogers JA**, Mead PT, Harrison K, Mote A, Lukasik G, Kulatilaka W, Wilkerson J, and Lacy Jr TE, “The Simulation of Hypervelocity Impacts to High-Density Polyethylene,” presented at the *Society of Engineering Science (SES) Annual Technical Meeting*, College Station, TX, October 16–19, 2022.
6. **Rogers JA**, Mead P, Wilkerson J, Lacy Jr TE, and Williams N, “Simulating Hypervelocity Impacts to High-Density Polyethylene,” in the *Proceedings of the AIAA SciTech 2023 Forum*, National Harbor, MD, January 23–27, 2023. <https://doi.org/10.2514/6.2023-2021>.
7. **Rogers JA**, Lukasik G, Martin B, Mead P, Mote A, Wilkerson JW, Kulatilaka W, and Lacy Jr TE, “In-situ Characterization of Hypervelocity Simultaneously Launched Distributed Particles,” presented at the *16th Hypervelocity Impact Symposium*, Alexandria, VA, September 18–22, 2022. **Alex Charters Scholar Award.**
8. **Rogers JA**, Lukasik G, Mead P, Harrison K, Mote A, Kota KR, Wilkerson JW, Kulatilaka W, and Lacy Jr TE, “The Texas A&M University Hypervelocity Impact Laboratory: A State-of-the-Art Facility for High-Rate Materials Characterization,” presented at the *16th Hypervelocity Impact Symposium*, Alexandria, VA, September 18–22, 2022.
9. Mead P, **Rogers JA**, Intardonato M, Lukasik G, Wilkerson JW, Kulatilaka W, Vankirk GH, and Lacy Jr TE, “Hypervelocity Impact Response of High Performance Concrete Targets of Varying Thickness,” presented at the *16th Hypervelocity Impact Symposium*, Alexandria, VA, September 18–22, 2022.
10. **Rogers JA**, Lukasik G, Mead P, Harrison K, Mote A, Kota KR, Wilkerson JW, Kulatilaka W, and Lacy Jr TE, “The Texas A&M University Hypervelocity Impact Laboratory: A Modern Aeroballistic Range Facility for High-Rate Materials Characterization,” presented at the *71st Aeroballistic Range Association (ARA) Meeting*, Königswinter, Germany, July 31–August 6, 2022. **2022 Student Participation Award Recipient.**
11. Lukasik GD, **Rogers JA**, Lacy Jr TE, and Kulatilaka WD, “High-Speed Imaging Diagnostics of Hypervelocity Projectile-Water Droplet Interactions,” presented at the *Optica LACSEA 2022 Conference*, Vancouver, Canada, July 11–1, 2022.
12. **Rogers JA**, Martin BE, Lukasik G, Wilkerson JW, Kulatilaka WD, and Lacy Jr TE, “Hypervelocity Simultaneously Launched Distributed Particles for Studying Environmental Effects on Hypersonic Vehicles,” presented at the *UCAH Spring 2022 Forum*, College Station, TX, March 30–31, 2022. **1st Place Award.**
13. Lukasik G, **Rogers JA**, Lukasik G, Kulatilaka WD, and Lacy Jr TE, “Application of Digital Particle Tracking and Schlieren Imaging to Study Hypersonic Projectile-Particle Interactions,” presented at the *UCAH Spring 2022 Forum*, College Station, TX, March 30–31, 2022.
14. Intardonato M, Lukasik G, **Rogers JA**, Lacy Jr TE, and Kulatilaka WD, “A Single-Camera Multi-Angle Imaging Apparatus for High-Rate Materials Testing Applications,” presented at the *UCAH Spring 2022 Forum*, College Station, TX, March 30–31, 2022.
15. Lukasik G, **Rogers JA**, Kota KR, Bowersox RD, Lacy Jr TE, and Kulatilaka WD, “Ultra-Highspeed Optical Diagnostics of Water Droplet Impact, Breakup and Shock Boundary Layer Interactions of Hypervelocity Projectiles,” presented at the *AIAA SciTech 2022 Forum*, San Diego, CA, January 3–7, 2022.
16. Harrison K, Kota K, **Rogers J**, Mead P, Mote A, Kulatilaka W, Wilkerson J, Lacy Jr TE, “Hypervelocity Impact Response of Stitched CFRP Laminates,” presented at the *2021 American Society for Composites Conference*, Virtual, September 14–18, 2021.

17. Lukasik G, **Rogers J**, Kota K, Wilkerson J, Lacy Jr TE, Kulatilaka W, “Application of Digital Particle Tracking and Schlieren Imaging to Study Debris Cloud and Shockwave Formation During Hypervelocity Impacts,” presented at the *AIAA SciTech 2021 Forum*, Virtual, January 11–15 & 19–21, 2021.
18. **Rogers J**, Mead P, Harrison K, Kota K, Leaverton J, Lukasik G, Kulatilaka W, Wilkerson J, Lacy Jr TE, “Hypervelocity Impact Response of Polyethylene Plates,” presented at the *AIAA SciTech 2021 Forum*, Virtual, January 11-15 & 19–21, 2021.
19. **Rogers J**, “Robust Positioning for Autonomous Platforms Using Adaptive Measurement Noise Covariance Distributions.” presented at the *Mississippi State University 2019 Spring Research Symposium*, Starkville, MS, April 16, 2019. **1st Place Award.**
20. **Rogers J**, “Accurate and Cost-Efficient Indoor Positioning System.” Mississippi State University 2018 Summer Research Symposium, August 1, 2018, Starkville, MS, US. **1st Place Award.**
21. **Rogers J**, “Space Launch System (SLS) Block 1 Functional Integration.” presented at the *NASA Marshall Space Flight Center 2017 Intern Symposium*, Huntsville, AL, August 3, 2017.
22. **Rogers J***, McCandless M, Harris K, “CubeSat for Photographing the 2017 Solar Eclipse.” presented at the *Mississippi State University 2016 Summer Research Symposium*, Starkville, MS, August 1, 2016. *Presenter.

PLANNED PEER-REVIEWED JOURNAL PAPERS (IN-PREPARATION)

1. **Rogers JA**, Xaio K, Wilkerson J, Thomas EL, Lacy Jr TE. “Size Matters: Ballistic Impact Across 11 Decades of Kinetic Energy,” in preparation for the *International Journal of Impact Engineering*. Expected submission date: 12/23.
2. **Rogers JA**, Wilkerson J, Thomas EL, Lacy Jr TE. “Probing Temperature Effects on the Hypervelocity Impact Response of Polyethylene,” in preparation for the *International Journal of Impact Engineering*. Expected submission date: 12/23.
3. Mead P, Vankirk G, **Rogers JA**, Wilkerson J, Lacy Jr TE. “Hypervelocity impact modeling of CorTuf concrete,” in preparation for the *International Journal of Impact Engineering*. Expected submission date: 12/23.
4. Murtaugh M, **Rogers JA**, Leaverton JD, Lacy Jr TE. “An Empirical Model for Hypervelocity Sabot Separation,” in preparation for the *International Journal of Impact Engineering*. Expected submission date: 12/23.
5. Motta de Castro E, **Rogers JA**, Mead P, Lacy Jr TE, Asadi A. “Tuning the Hypervelocity Impact Response of Woven CF-PEEK Composites Using Carbon Based Nanofillers,” (In preparation and expected to submit by 12/23)
6. Lukasik G, **Rogers JA**, Kulatilaka WD, Lacy Jr TE, “A Method for Tracking Hypervelocity-Impact-Induced Polyethylene Fragments,” in preparation for the *International Journal of Impact Engineering*. Expected submission date: 12/23.
7. Harrison K, Mote A, Kota K, **Rogers JA**, Mead P, Lacy Jr TE “Performance Evaluation of Vectran Stitched and Unstitched Warp-Knit CFRP Laminates Subjected to Hypervelocity Impacts.” (In preparation and expected to submit by 12/23)
8. Murtaugh M, **Rogers JA**, Allaire D, Lacy Jr TE, “Comparing Regression Methods for Two-Stage Light Gas Gun Muzzle Velocity Prediction.” in preparation for the *International Journal of Impact Engineering*. Expected submission date: 12/23.
9. Lukasik G, **Rogers JA**, Wilkerson J, Lacy Jr TE, Kulatilaka W, “3D Particle Tracking of Simultaneously Launched Hypervelocity Particles Using Digital In-line Holography,” in preparation for the *American Institute of Aeronautics and Astronautics (AIAA) Journal*. Expected submission date: 12/23.
10. Mead P, **Rogers JA**, Mote A, Williams NT, Vankirk G, Wilkerson J, Lacy Jr TE. “Hypervelocity Impact Response of High-Performance Concrete Targets of Varying Thickness.” (In preparation and expected to submit by 10/23)

PLANNED CONFERENCE PAPERS (IN-PREPARATION)

1. **Rogers JA**, Thomas EL, Wilkerson J, and Lacy Jr TE, “Hypervelocity-Impact-Induced Changes in Crystallographic Structure of Polyethylene,” in preparation for the *Proceedings of the AIAA SciTech 2024 Forum*. Updated Sep 2023.
2. Wiest M, **Rogers JA**, Lukasik G, Kulatilaka WD, Wilkerson J, and Lacy Jr TE, “Hypervelocity-Impact-Induced Cavitation in Soft Gels,” in preparation for the *Proceedings of the AIAA SciTech 2024 Forum*. Update Sep 2023.

PLANNED CONFERENCE PRESENTATIONS (IN-PREPARATION)

1. **Rogers JA**, Thomas EL, Wilkerson J, and Lacy Jr TE, “Hypervelocity-Impact-Induced Changes in Crystallographic Structure of Polyethylene,” to be presented at the *AIAA SciTech 2024 Forum*. Updated Sep 2023.
2. Wiest M, **Rogers JA**, Lukasik G, Kulatilaka WD, Wilkerson J, and Lacy Jr TE, “Hypervelocity-Impact-Induced Cavitation in Soft Gels,” to be presented at the *AIAA SciTech 2024 Forum*. Feb 2023.

RESEARCH TRAVEL

1. Rogers JA, Brookhaven National Laboratory (BNL), Department of Energy, Upton, Long Island, New York, January 19–23, 2023.

OTHER ACADEMIC/OUTREACH ACTIVITIES

- Planned and hosted research poster session: “MEGSO Annual Research Poster Session,” College Station, TX, January 2023.
- Designed and developed TAMU MEGSO website “Mechanical Engineering Graduate Student Organization (MEGSO).” See <https://tamumegso.org>
- Mentored mechanical engineering capstone design teams: “Target Heating Team” (Fall 2021-Spring 2022), “Tessellated Structures Team” (Fall 2021-Spring 2022), “Piston Velocimetry Team” (Fall 2021-Spring 2022), “FXR Fixture Team” (Spring 2020-Fall 2020), “Target Fixture Team” (Spring 2019-Fall 2019).
- Designed and developed research website “TAMU Materials for Extreme Environments.” See <https://telacyjr.engr.tamu.edu/>
- Designed and developed “TAMU Hypervelocity Impact Laboratory” webpage. See <https://telacyjr.engr.tamu.edu/facility/hypervelocity-impact-laboratory-hvil/>
- Acknowledged in the CBS 19 Weather Special video: “Extreme East Texas: When Sunny Turns Severe,” 2022. See https://www.youtube.com/watch?v=2DzJu4gpi_Y
- Assisted with and featured in the Atomic Frontier educational YouTube video, “Asteroid Shields are OP,” 2022. See <https://www.youtube.com/watch?v=k6g9Yv8Lw0U&t=1s>.
- Developed, recorded, and published educational YouTube video about hypervelocity impact experimentation: “TAMU Hypervelocity Impact Lab Introduction,” 2021. See <https://www.youtube.com/watch?v=FtbLTBGH62M&t=61s>.
- Developed, authored, and implemented safety, operational, and training procedures for the Hypervelocity Impact Laboratory (HVIL).

RELEVANT ACADEMIC COURSES

- **Elements of Composite Materials**, Dr. Thomas Lacy, Jr., Texas A&M University (Grad, Audit).
- **The Structure of Materials**, Dr. Edwin (Ned) Thomas, Texas A&M University (Grad, Audit).
- **Mechanics of Fracture and Fatigue**, Dr. Thomas Lacy, Jr., Texas A&M University (Grad, Audit).
- **Continuum Mechanics**, Dr. Kumbakonam Rajagopal, Texas A&M University (Grad).
- **The Theory of Elasticity**, Dr. Kumbakonam Rajagopal, Texas A&M University (Grad).
- **Advanced Topics in Elasticity**, Dr. Kumbakonam Rajagopal, Texas A&M University (Grad).
- **Linear Finite Element Methods**, Dr. Thomas Lacy, Jr., Texas A&M University (Grad).
- **Nonlinear Finite Element Analysis**, Dr. J.N. Reddy, Texas A&M University (Grad).
- **Numerical Partial Differential Equations**, Dr. Matthias Maier, Texas A&M University (Grad).
- **Mechanics of Compliant Materials**, Dr. Alan Freed, Texas A&M University (Grad).
- **Modeling & Analysis of Mechanical Systems**, Dr. Sivakumar Rathinam, Texas A&M University (Grad).
- **Multiscale Modeling in Mechanics**, Dr. Justin Wilkerson, Texas A&M University (Grad).
- **Optical Techniques for Engineers**, Dr. Waruna Kulatilaka, Texas A&M University (Grad).
- **Viscoelasticity**, Dr. Alan Freed, Texas A&M University (Grad).
- **Waves, Shocks, & Dynamic Failure**, Dr. Justin Wilkerson, Texas A&M University (Grad).
- **Elements of Composite Materials**, Dr. Thomas Lacy, Texas A&M University (Grad).
- **Compressible Aerodynamics**, Dr. David Thompson, Mississippi State University (Undergrad).
- **Aero Structural Analysis I (Solid Mechanics)**, Dr. Thomas Lacy, Mississippi State University (Undergrad).
- **Aero Structural Analysis II (Energy Methods)**, Dr. Rani Sullivan, Mississippi State University (Undergrad).
- **Vibrations**, Dr. Rani Sullivan, Mississippi State University (Undergrad).
- **Aerospace Structural Design**, Dr. Rani Sullivan, Mississippi State University (Undergrad).

Complete list of engineering/physics courses can be found on [LinkedIn](#) or Transcripts (upon request).