

Eric Anthony Comstock
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EDUCATION **Georgia Institute of Technology**, Atlanta, GA
PhD student, Aerospace Engineering
GPA: 3.92/4.0 (current as of the end of spring 2025)

Georgia Institute of Technology, Atlanta, GA
Master of Science, Aerospace Engineering
GPA: 3.9/4.0 December 2024

Texas A&M University, College Station, TX
B.S. Aerospace Engineering,
Engineering Honors Program
Magna Cum Laude
Minors: Chemistry and Mathematics
GPA: 3.885/4.0 December 2022

RESEARCH INTERESTS Advanced Propulsion, Alternative Propulsion, Plasma Physics, Plasma Devices, Laser Diagnostics, Magnetohydrodynamics, Electromagnetism, Computational Fluid and Plasma Dynamics, Simulation Development, High Performance Computing

CURRENT FUNDING **2024 National Science Foundation Graduate Research Fellowship**
Goizueta Foundation Fellowship

PROFESSIONAL SOCIETIES American Institute of Aeronautics and Astronautics (AIAA)
American Physical Society (APS)

EXPERIENCE

NSF GRFP Federally Funded Graduate Student
Georgia Institute of Technology, Atlanta, Georgia
Low-Gravity Science and Technology Lab August 2024 – present

- Further development of a magnetohydrodynamic propulsion system from spring of 2024
- Creation of a Vlasov simulator using Python to improve simulation accuracy and further verify the models
- Leading a group of undergraduate researchers analyzing the feasibility of containing atmospheres using rotational gravity in large space habitats and quantifying the loss rates thereof

Modeling and Simulation Graduate Summer Intern
The Aerospace Corporation, Chantilly, VA May 2024 – August 2024

- Debugging, refactoring, and integrating communications, plotting, and data processing software for an Aerospace internal space object catalog
- Abstraction of an event-based logistics modeling simulation system from use in a specific application to more general use for arbitrary vehicles and cargo elements, using JSON configuration files

- Invented a group of software engineering initiatives, scalable to any database application, to make code easier to use, easier for onboard training, easier for debugging, and easier for the project to be expanded to more contributors

Graduate Research Assistant

Georgia Institute of Technology, Atlanta, Georgia

Low-Gravity Science and Technology Lab

January 2023 – May 2024

- Analysis and simulation of magnetohydrodynamic propulsion systems where induced electric currents and magnetic fields accelerate ambient plasma in orthogonal directions, thus providing thrust
- Optimization of a spherical mirror surface generated by an electromagnetically modified ferrofluid-based liquid mirror in both terrestrial and lunar gravity environments

Undergraduate Research Assistant

Texas A&M University, College Station, Texas

National Aerothermochemistry and Hypersonics Lab

September 2022 – December 2022

- Computational modeling and optical spectrum analysis of hypersonic flows

Undergraduate Research Assistant

Texas A&M University, College Station, Texas

Laser Diagnostics and Plasma Devices Lab

January 2022 – August 2022

- In the context of beamed propulsion, computational modeling of a laser refracted through a particle beam, incorporating low-density effects and the modeling of quantum absorption and refraction spectra

Teaching Assistant

Texas A&M University, College Station, Texas

Aerospace Engineering Department

January 2021 – May 2021

- Graded papers for a senior level class in Finite Difference and Finite Element Analysis (AERO 430)

Undergraduate Research Assistant

Texas A&M University, College Station, Texas

January 2021 – May 2021

- Created a simulation program in Python simulating rotational-vibrational spectra for use in hypersonic flow spectroscopy

JOURNAL ARTICLES

- E. Comstock, H. Chen, T. Hu, Á. Romero-Calvo, “On the Feasibility of Spherical Magnetic Liquid Mirror Telescopes,” *Acta Astronautica*, 2025, doi: 10.1016/j.actaastro.2025.01.066
- Eric A. Comstock, Á. Romero-Calvo, “External Plasma-Breathing Magnetohydrodynamic Spacecraft Propulsion,” *Journal of Spacecraft and Rockets*, 2025, *in preparation*
- Eric A. Comstock, Á. Romero-Calvo, “Collisionless Plasma Momentum Transfer,” *Physics of Plasmas*, 2025, *in preparation*

CONFERENCE PAPERS AND PRESENTATIONS

- Eric A. Comstock, Á. Romero-Calvo, “External Plasma-Breathing Magnetohydrodynamic Spacecraft Propulsion,” Paper and Oral Conference Presentation at the AIAA SciTech Forum, Orlando, Florida, US, January 6 - 10, 2025

- Neil Rowlands, Álvaro Romero-Calvo, David Stafford, Rebecca Kamire, Amanda Childers, Stephen F. Yates, Emir Rahislic, Sheng-Hai Zheng, Peter Cameron, Gabriel Cano-Gómez, Hugh Chen, Eric Comstock, Miguel Herrada, Tianyang Hu, “Development of a self-assembling ferrofluidic ionic liquid mirror”, In SPIE Astronomical Telescopes + Instrumentation, Yokohama, Japan, June 16–21, 2024
- Eric A. Comstock, Á. Romero-Calvo, “External Plasma-Breathing Magnetohydrodynamic Spacecraft Propulsion,” Oral Conference Presentation at the 65th Annual Meeting of the APS Division of Plasma Physics, Denver, Colorado, US, October 30 – November 3, 2023
- Eric A. Comstock, Christopher Limbach, “Methods of Low-Density Gas Simulation in the Context of Beamed Propulsion Techniques,” Poster at the Texas A&M University – College Station College of Engineering Undergraduate Summer Research Grant (USRG) Program, August 3, 2022

HONORS AND AWARDS

- April 2024 – National Science Foundation Graduate Research Fellowship Program (NSF GRFP)
- August 2023 – APS Division of Plasma Physics Travel Grant – This is a selective grant awarded to students presenting their research at the October 2023 APS DPP meeting. Preference is given to first authors.
- Fall 2023 – Goizueta Foundation Fellowship at Georgia Tech – This is a renewable fellowship for up to 4 years. Fellowship recipients bring exemplary levels of scholarship and innovation to the academic departments that host their study and research.
- Graduated at 17 years of age from Texas A&M University – College Station, Magna Cum Laude (3.89/4.0 GPA), Bachelor of Science in Aerospace Engineering with Engineering Honors, and minors in chemistry and mathematics, December 2022
- Summer 2022 – Undergraduate Summer Research Grant (USRG) at Texas A&M - College Station – This is a highly selective grant, open to STEM students from all over the country who plan to attend graduate school, funded by the Texas A&M – College Station College of Engineering.
- Dean’s Honor Award, Fall 2022, Spring 2022, Fall 2021, Fall 2020, Texas A&M – College Station College of Engineering
- Engineering Honors Program, Texas A&M – College Station Aerospace Engineering Department
- Tau Beta Pi, National Engineering Honor Society, November 2020
- National Chemistry Olympiad, Honors designation in 2018 and in 2019 (top 150 students nationwide)
- President, Chemistry Club, Lone Star College – Montgomery, 2017
- Davidson Young Scholar, 2010

SKILLS

COMSOL Multiphysics, MATLAB, Wolfram Mathematica, Maple, Python, JSON, HTML, C++, R, MS Office, Solidworks, General Mission Analysis Tool (GMAT), CFD, NEQAIR, Pointwise, US3D, OpenMDAO, SIMION 2020, Leadership experience, Finite Difference Method and Finite Element Analysis for hyperbolic and parabolic PDEs in arbitrary dimensional spaces, Rigid Body Dynamics, Runge-Kutta 4, Least Squares Method, Control Systems Analysis (Laplace transfer functions and state-space systems)

RELEVANT COMPLETED GRADUATE COURSEWORK as of the end of spring 2025

Spacecraft Orbit Determination, High Voltage Engineering, Non-linear Control Systems, Spacecraft Engineering, Applied Policy Methods and Data Analysis, Space Plasma Physics, Electric Propulsion, Aerothermochemistry, Numerical Methods of Partial Differential Equations, Computational Fluid Dynamics, Turbulent Flows, Viscous Fluid Flows, Orbital Mechanics, Optimization for Design of Engineered Systems, Space System Design, Air Breathing Propulsion