Tommy Clark

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Education

University of Colorado at Boulder — Boulder, CO
PhD/MS in Aerospace Engineering Sciences — *Aug. 2024 – Present*
Focus Area: Astrodynamics and Satellite Navigation (ASN)
GPA 4.0/4.0

California Institute of Technology — Pasadena, CA
BS in Physics — *Sept. 2020 – June 2024*
Advisor: Tom Rosenbaum
GPA 4.2/4.3

Work/Research Experience

Artificial Intelligence for Spacecraft Trajectory Design — Aug. 2024 – Present
Celestial and Spaceflight Mechanics Lab — *Boulder, CO*
- Developing state-of-the-art tools using Autoencoders and Reinforcement Learning to design spacecraft trajectories.

Quantum Spin Glass Measurements — Jan. 2023 – July 2024
Rosenbaum Lab, California Institute of Technology — *Pasadena, CA*
- Performed Experiments on quantum systems to understand their memory effects.

Galaxy Evolution Researcher — June 2021 – Jan. 2023
Cosmic DAWN Center, Niels Bohr Institute — *Copenhagen, Denmark*
- Implementing a novel temperature correction to photometric data to better understand galaxy evolution using machine learning.

Awards

NASA NSTGRO Fellowship — May 2025
- Grant awarded for proposal titled "Data Driven Representations of Trajectories in Cislunar Space.

NSF Graduate Research Fellowship Program Awardee — June 2025

Inaugural Prof. George H. Born Graduate Assistantship Recipient, CU Boulder — Aug. 2024
- Supports a graduate student for their first year who shows promise in astrodynamics and satellite navigation. Dr. Born was a pioneer in astrodynamics and orbit determination.

Robert F. Christy Prize for Outstanding Senior in Theoretical Physics — June 2024
- Award presented to a senior at Caltech in recognition of their success in coursework and in research.

Goldwater Scholarship — Mar. 2023
- The most prestigious undergraduate scholarship in engineering, mathematics, and science. Awarded annually by the Goldwater Foundation.

Sen. Tammy Duckworth's Nomination and Appointment to U.S. Naval Academy — Oct. 2020

Rep. Mike Quigley's Nomination and Appointment to U.S. Air Force Academy — Oct. 2020

Teaching Experience

Teaching — Sept. 2023 – June 2024
California Institute of Technology — *Pasadena, CA*
- Taught and graded Introduction to Quantum Mechanics with lectures of about 50 students three times a week with Dr. Sergi Hildebrandt (JPL).
- Teaching assistant for advanced physics labs including quantum and nuclear experiments.

Leadership Experience

Caltech SURF Ambassador Aug. 2024 – June 2024
California Institute of Technology *Pasadena, CA*

- Served as a research ambassador for the Summer Undergraduate Research Fellowship at Caltech.
- Helped students develop projects for the summer, write research proposals, and find potential PIs.
- Planned events and seminars for students to share their research and learn skills for a successful research project.

Electronics and Autonomy Team Lead Aug. 2022 – Dec. 2022
California Institute of Technology *Pasadena, CA*

- Led a team of ten students to develop and prototype an autonomous rover for the NASA Big Idea Challenge.
- Taught new students electronics integration and automation and oversaw progress on the project.

Presentations

Compact Representations of Periodic Orbit Families Using Autoencoder Neural Networks (Oral) Aug. 2025
American Astrodynamics Specialist Meeting *Boston, MA*

Measurements of a Quantum Spin Glass (Oral) Sept. 2023
Institute for Quantum Information and Matter *Pasadena, CA*

The Earliest Stage of Galactic Star Formation (Poster) Jan. 2023
American Astronomical Society Meeting 241 *Seattle, Washington*

Why do Galaxies die? (Oral) Sept. 2021
Cosmic Dawn Center, Niels Bohr Institute *Copenhagen, Denmark*

Publications

Compact Representations of Periodic Orbit Families Using Autoencoder Neural Networks AAS/AIAA Specialists Meeting 2025
Thomas Clark, Daniel J. Scheeres

The Earliest Stage of Galactic Star Formation APJL June 2023
Charles Steinhardt, Vadim Rusakov, Thomas H. Clark, Andrei Diaconu, et al.

Relevant Coursework

STEM Courses: Astrodynamics, Orbit Determination, Quantum Computing, Machine Learning, Robotics, Data Structures
Economics Courses: Chinese Finance, Econometrics, Game Theory

Skills

Technical: Python, Java, C, STK, Matlab, TensorFlow, PyTorch, SPICE

General: Oral and written communication, project management, problem-solving

Other: Instrument-rated pilot, Golfer, Avid Investor