Samuel N. Evans

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EDUCATION

Boston University *Fall 2019 — Present*

PhD in Astronomy – Expected Spring 2025

Advisor: Professor Meers Oppenheim

Cornell University *Fall 2015 — Spring 2019*

Bachelor of Arts in Physics (*cum laude*) and Mathematics (*magna cum laude*)

RESEARCH EXPERIENCE

Solar Simulations – Multifluid Simulations of the Sun's Chromosphere

with Professor Meers Oppenheim | Boston University *Spring 2020 — Present*

and Doctor Juan Martínez-Sykora | Lockheed Martin Solar and Astrophysics Laboratory

- Investigating the effects of small-scale turbulence and plasma instabilities throughout the Sun's chromosphere. This work will ultimately determine the role of plasma turbulence in heating the chromosphere.
- Improving, validating, and debugging a new multi-fluid plasma simulation code.
- Running, analyzing, and developing analysis tools for simulations of plasma instabilities.
- Advancing theory and numerically calculating theoretical predictions for plasma instabilities and turbulence.

Numerical Cosmology – Sunyaev–Zel'dovich Effects in CMB

with Professor Rachel Bean | Cornell University *Fall 2018 — Spring 2019*

- Investigated possibility of using thermal and kinetic Sunyaev–Zel'dovich effects in CMB maps to predict peculiar velocities of galaxies and halos.
- Worked to compare various analysis pipelines to determine size of systematic errors in galaxy velocity predictions.

Numerical Cosmology – Halo Relaxation Statistics

with Professor Mark Vogelsberger | MIT *Summer 2018*

- Investigated criteria for classifying whether a halo is relaxed, focusing on discrepancies between simulations and mock observations.
- Analyzed the results of large-scale cosmological simulations by writing efficient Python code to manipulate large datasets.

Combinatorial Geometry

with Professor Ed Swartz | Cornell University   *Fall 2016 — Spring 2019*

- Manipulated combinatorial representations of topological objects via extensive computer programming with the GAP language.
- Constructed an algorithm to create stacked triangulations of arbitrary genus surfaces on minimal vertices.

Ultracold Atomic Physics

with Professor Mukund Vengalattore | Cornell University   *Spring 2017 — Spring 2018*

- Worked with optics, electronics, and computer programming involving signal processing.
- Modeled results of laser frequency shifts through an electro-optic modulator powered by a high frequency sawtooth voltage wave.

HONORS AND AWARDS

- Dean's Fellow, *Boston University*   *Spring 2020*
- Hunter R. Rawlings III Cornell Presidential Research Scholar, *Cornell University*
- Irvine and Pauline Tanner Dean's Scholar, *Cornell University*
- Dean's List, *Cornell University*   *Fall 2016, Spring 2017, Fall 2017, Fall 2018*

WORKPLACE EXPERIENCE

Teaching Assistant at Boston University | *AS105 "Alien Worlds", Prof. J. J. Hermes*   *Fall 2019*

Math Support Center at Cornell University

Head Tutor | Fall 2017 — Spring 2019 | Tutor   *Fall 2016, Spring 2017*

- Helped students on a walk-in basis to understand the concepts in any level math class.
- Conducted interviews to assist in the hiring process; coordinated tutor schedules.

TALKS / CONFERENCES

Poster | *AGU Fall Meeting*   *December 2021*

- SH25A-2073: Multi-fluid Simulations of Small-scale Collisional Plasma Instabilities in the Solar Chromosphere

Poster | *Hinode-14 / IRIS-11 Joint Science Meeting*   *October 2021*

- ECR-P01: Multi-fluid Simulations of Small-scale Collisional Plasma Instabilities in the Solar Chromosphere

Poster | *AGU Fall Meeting*   *December 2020*

- SH001-0016: Multi-Fluid Simulations of Collisional Plasma Instabilities in the Solar Chromosphere

SKILLS

Python (*5 years*), Fortran (*2 years*), Bash/Shell (*2 years*), C++ (*2 years*), Java (*1 year*), GAP (*4 years*), Mathematica (*1 year*), Igor (*1 year*), Microsoft Excel (*10+ years*), LaTeX (*4+ years*)