

RYAN GOLANT

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EDUCATION

Columbia University, New York, NY

Sept. 2020 - present

- Ph.D. in Astronomy (in progress; expected graduation Summer 2026)
 - Thesis advisors: Greg Bryan & Lorenzo Sironi
- M.Phil. in Astronomy (Feb. 2023)
- M.A. in Astronomy (Oct. 2022)
 - GPA: 4.1/4.0

Princeton University, Princeton, NJ

Sept. 2016 - June 2020

- B.A. in Astrophysical Sciences (May 2020)
 - GPA: 3.7/4.0 (*magna cum laude*)
 - Senior thesis: *The answer, my friend, is blowing in the stellar wind: Investigating the Effects of Early Stellar Feedback on the Interstellar Medium and Star Formation* (Advisors: Eve Ostriker & Chang-Goo Kim)
- Minor in Computer Science (May 2020)

OTHER EDUCATION: WORKSHOPS & SUMMER SCHOOLS

ComSciCon 2022 Flagship Workshop (Aug. 2022; Cambridge, MA). Three-day intensive workshop at MIT focused on building science communication skills.

Code/Astro 2022 (June 2022; Pasadena, CA). Week-long workshop at Caltech focused on software development for astronomy and astrophysics research.

American Physical Society – Division of Plasma Physics: Topical Group in Plasma Astrophysics (GPAP) Summer School (June 2019; Swarthmore, PA). Three-day intensive summer school at Swarthmore College covering the basics of plasma physics and its applications to astrophysics.

Princeton Plasma Physics Lab (PPPL) Undergraduate Summer Course in Plasma Physics (June 2019; Princeton, NJ). Week-long summer school at PPPL covering the basics of plasma physics, with emphasis on laboratory plasma physics and nuclear fusion energy.

AWARDS & HONORS

Columbia Center for Teaching and Learning’s Lead Teaching Fellowship (Sept. 2022)

NSF Graduate Research Fellowship Honorable Mention (Apr. 2022)

AAS National Osterbrock Leadership Fellowship (Oct. 2021)

Columbia University Dean’s Fellowship (Sept. 2020)

Princeton-UTokyo Educational Partnership in Plasma Physics research scholarship
(March 2019)

ACADEMIC PUBLICATIONS

Sironi, L., Comisso, L., **Golant, R.** “Generation of near-equipartition magnetic fields in turbulent collisionless plasmas.” (2023, **submitted**)

Golant, R., Sironi, L., Vanthieghem, A. “Sustaining Large-Scale Magnetic Fields in Gamma-Ray Burst Afterglows.” (2023, *in prep.*)

Golant, R., Bryan, G., Abruzzo, M., Bordner, J. “Defining Gravity: Implementing a Scalable Gravity Solver in Enzo-E.” (2023, *in prep.*)

Lewis, B., et al. (including **Golant, R.**) “Quantifying the Effects of Astrobites on Undergraduate Astronomy Students.” (2023, *in prep.*)

ACADEMIC TALKS

241st AAS Meeting (Jan. 2023; Seattle, WA): *Defining Gravity: Implementing a Scalable Gravity Solver in Enzo-E*

240th AAS Meeting (June 2022; Pasadena, CA): *Sustaining Large-Scale Magnetic Fields in Gamma-Ray Burst Afterglows*

2021 Gothamfest (Dec. 2021; New York, NY): *Sustaining Large-Scale Magnetic Fields in Gamma-Ray Burst Afterglows*

SOFTWARE

Co-developer of **Enzo-E** (Oct. 2021 - present). Lead developer of a new, scalable gravity solver (using the Fast Multipole Method) for the cosmological (magneto)hydrodynamics code Enzo-E.

Co-developer of **N-Body Builder** (June 2021 - present), an interactive module for visualizing different numerical methods for N-body simulation. Development began at Code/Astro 2022.

Co-developer of **Pegasus++** (Spring 2019). Led the implementation of an expanding box module in the hybrid-PIC code Pegasus++ to study the behavior of expanding or contracting plasmas.

TEACHING & MENTORING

Classes taught:

- *Astronomy Lab II* (Spring 2022; 11 students). Designed class activities, created handouts and worksheets, gave short lectures, and graded student work. Class met once per week for 3 hours and was designed to introduce non-STEM undergrads to quantitative reasoning and data analysis in modern astronomy. Received an average student evaluation score of 4.8/5.0.
- *Astronomy Lab II* (Spring 2023; 11 students).

Classes TA'd (i.e., held weekly office hours, led review sessions prior to exams, graded exams, helped professors run small-group activities during lectures):

- *Stars and Atoms* (Fall 2020; 84 students). 4.7/5.0 student evaluation.
 - Gave guest lecture on numerical algorithms in December 2020.
- *Earth, Moon, and Planets* (Spring 2021; 69 students). 4.5/5.0 student evaluation.
- *Life in the Universe* (Summer 2021; 61 students). 4.0/5.0 student evaluation.
- *Stars, Galaxies, and Cosmology* (Fall 2021; 53 students). 5.0/5.0 student evaluation.

Teaching development:

- **Lead Teaching Fellow (LTF)** with the Center for Teaching and Learning (CTL) (Sept. 2022 - present). Serve as liaison between the CTL and the Columbia astronomy department. Hold workshops and events in the department to promote teaching development.
 - Co-founded (and now co-organize) “Teaching Tea,” a biweekly departmental event dedicated to open, round-table discussions of relevant topics in astronomy pedagogy (Dec. 2022 - present).
 - Held two-part (total 160 minutes) workshop “Teaching Scientifically: Improving your teaching via the scientific method” (Oct. 2022). Workshop introduced the concept of “Teaching-as-Research” and led participants through the basic steps of planning a Teaching-as-Research project. Workshop had a total of 19 participants, including astronomy grad students, postdocs, and faculty.
- Participant in CTL’s **Teaching Development Program (TDP)** (Jan. 2022 - present). On the “Advanced Track” for the TDP, having participated in and written reflections on numerous pedagogical development activities organized by the CTL. These activities include workshops, learning communities, and teaching observations.
- Involvement with the **Center for the Integration of Research, Teaching and Learning (CIRTL)** (Aug. 2022 - present):
 - Member of CIRTL’s “Teaching-as-Research (TAR) Leaders Learning Community,” which meets once per month to discuss the best practices for facilitating Teaching-as-Research among STEM instructors (Oct. 2022 - present).
 - Completed CIRTL’s online course “An Introduction to Evidence-Based Undergraduate STEM Teaching” with an A grade (Fall 2022).

Tutoring:

- **Computer Science Lab Teaching Assistant** (Fall 2019 - Spring 2020). Assisted Princeton undergrads in the introductory computer science classes COS 126 (“Computer Science: An Interdisciplinary Approach”), COS 217 (“Introduction to Programming Systems”), and COS 226 (“Algorithms and Data Structures”). Held office hours for four hours per week (two hours each on Thursday and Friday evenings) to answer student questions and assist in the debugging of code.
- **Tutor in Princeton’s McGraw Center for Teaching and Learning** (Spring 2018 - Spring 2020). Tutored Princeton undergrads in MAT 103 (“Calculus I”), MAT 104 (“Calculus II”), MAT 175 (“Mathematics for Economics/Life Sciences”), MAT 201 (“Calculus III”), MAT 202 (“Linear Algebra”), and MAT 204 (“Accelerated Linear Algebra”). Met with students at least once per week throughout the academic year.
 - Promoted to position of **Senior Tutor** for 2019-2020 academic year. Assisted in the process of hiring and training new tutors, as well as outreach on behalf the McGraw Center’s tutoring program.
- **Residential College Peer Tutor** in Princeton’s Mathey College (Spring 2018 - Spring 2020). Tutored Princeton undergrads in AST 203 (“The Universe”) and AST 204 (“Topics in Modern Astronomy”).

Mentoring:

- **Co-organizer of Columbia Astronomy’s grad-undergrad mentoring program** (Oct. 2021 - present). Facilitate interactions between Columbia astronomy graduate and undergraduate students by pairing grad mentors with undergrad mentees and holding events bringing grads and undergrads together.
 - Have mentored 6 astronomy and physics undergrads through the grad-undergrad mentoring program (Oct. 2020 - present).
- **Peer Academic Advisor** in Princeton’s Mathey College (Fall 2019 - Spring 2020). Advised and mentored a group of 24 Princeton sophomores on academic matters, such as selecting courses and preparing for exams.

OUTREACH & COMMUNITY SERVICE

Astrobites collaboration

Jan. 2021 - present

- *Author* (Jan. 2021 - present). Have written [15 articles for Astrobites](#), including undergrad-level summaries of recent astronomy papers, in-depth guides to important topics in modern astronomy, and interviews and talk summaries for plenary speakers at the 241st meeting of the AAS. [Four of my articles](#) have also been carried by AAS Nova.
- *Education committee co-chair* (July 2022 - present). Lead initiatives to build Astrobites as a pedagogical tool. Currently leading efforts to make Astrobites more accessible to blind/visually-impaired and deaf individuals, as well as to develop new ways for Astrobites to be used in outreach to high-schoolers and the general public.
 - Member of the core research team for an education research study evaluating the efficacy of Astrobites-based lesson plans in courses for undergraduate astronomy majors.

- *Undergraduate chair* (July 2022 - present). Lead initiatives to reach out to undergrads and help with the transition from undergraduate to grad school. Currently co-leading an effort to expand Astrobites’ resources for non-native English speakers and for non-US undergrads looking to apply to US grad schools.
- *Admin committee member* (July 2022 - present). Assist in administrative tasks pertaining to the entire Astrobites collaboration.
- *Hiring committee member* (Dec. 2021, Dec. 2022). Helped choose the new cohort of Astrobites members by reading applications and participating in committee-wide hiring discussions.
- *SciBites chair* (July 2021 - July 2022). Served as liaison between Astrobites and other “Bites” websites to support a collaborative network of blogs dedicated to popular science communication and the enrichment of young scientists.

National Osterbrock Leadership Program (NOLP)

Oct. 2021 - present

- Co-organized and co-led a splinter session on grad student leadership at the 241st meeting of the AAS (Jan. 2023).
- Co-organized a series of public astronomy talks for a tour group of 750 South African high-school students visiting New York and Columbia University (Oct. 2022).
- Co-organized an orientation for Columbia undergrads starting astronomy research for the summer (June 2022). Later held a workshop on scientific computing with Python for the same group of students (Aug. 2022).

Columbia Astronomy Public Outreach

Oct. 2022 - present

- Co-organize Columbia Astronomy’s public lecture and stargazing series (Oct. 2022 - present). This outreach series includes two events per month, free and open to anyone.
- Led the effort to revive Columbia Astronomy’s outreach program after a long period of dormancy due to the pandemic (Nov. 2022).

Science Storytellers (Feb. 2023 - present). Give planetarium-style talks on different sky cultures to children at the Variety Boys & Girls Club of Queens.

Astronomy at MSK (Spring 2023). Currently developing an astronomy outreach and education program for pediatric cancer patients at the New York cancer hospital Memorial Sloan Kettering.

Democracy Prep Coding Club (Spring 2021, Fall 2021, Fall 2022). Taught computer science and programming fundamentals to a group of underrepresented high school students in Harlem. Met once per week as part of an after-school program.

Expert reviewer for **Annals of the Deep Sky** (Aug. 2022 - present). Edited the article on Eridanus in August 2022.

Speaker at **Astronomy on Tap** (Nov. 2022, Jan. 2023). Gave public talks (titled “The Universe’s Magnetic Mystery”) at Astro on Tap NYC in November 2022 and at Astro on Tap Seattle in January 2023.

Treasurer for **Princeton Finding the Match** (Fall 2018 - Spring 2020). Ran campus-wide events focused on enrolling eligible Princeton students and faculty in the national bone marrow donor registry and spreading awareness of blood cancers and blood cancer treatment.

DEPARTMENTAL ACTIVITIES

Speaker host for Columbia Theoretical High-Energy Astrophysics (THEA) group (Sept. 2022 - present). Coordinate guest speaker visits (including one-on-one meetings) for the Columbia THEA group's weekly meetings.

Social media manager for the Columbia Astronomy department (Oct. 2022 - present). Operate Columbia Astronomy's Twitter, Instagram, and Facebook accounts, in addition to Columbia Astronomy's outreach webpage.

Lead organizer of Astrofest 2022 (Sept. 2022). Led the organizing team for the 2022 iteration of Columbia Astronomy's "Astrofest" mini-conference, which featured 69 talks, 30 undergraduate poster presentations, and over 100 attendees.

Speaker at STEM Interdepartmental Seminar Series (Nov. 2022). Gave a talk on my thesis research for the Columbia Graduate School of Arts and Science's monthly STEM Interdepartmental Seminar Series; the audience included Columbia graduate students from a wide range of STEM departments.