

# Danielle Ruth Skinner

## Curriculum Vitae

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### Education

May 2023	<b>Ph.D. Physics</b> Georgia Institute of Technology, Atlanta, GA Minor: Higher Education
Aug 2018	<b>M.S. Physics</b> Georgia Institute of Technology, Atlanta, GA
Jun 2017	<b>B.S. Physics and Astronomy</b> University of Washington, Seattle, WA Minor: Mathematics and Philosophy

### Teaching Experience

Sept 2023 – Present	<b>Instructor</b> Oregon State University, Corvallis, OR <ul style="list-style-type: none"><li>PH 212: General Physics with Calculus II</li></ul>
Aug 2017 – May 2018	<b>Graduate Teaching Assistant</b> Georgia Institute of Technology, Atlanta, GA <ul style="list-style-type: none"><li>Introductory Mechanics Labs (3 sections)</li><li>Introductory Electromagnetism Labs (4 sections)</li><li>Designed introductory lecture for each lab, assisted with lab set up and data collection and analysis, graded lab homework weekly, and exams.</li></ul>
Spring 2016	<b>Student Tutor</b> University of Washington, Seattle, WA <ul style="list-style-type: none"><li>Tutored introductory physics students. Topic covered: Mechanics</li></ul>

### Research Experience

May 2018 - Present	<b>Graduate Research Assistant</b> Georgia Institute of Technology, Atlanta, GA <ul style="list-style-type: none"><li>Reduced data, conducted statistics and feature engineering, looked for trends across different datasets, and created models and scientific visualizations using Python. Libraries and packages used include: Pandas, Yt, Numpy, SciPy, JSON, Matplotlib, H5py, Jupyter</li><li>Created analysis pipelines to correlate neutron star merger parameters with star formation on large datasets (&gt;40 Tb of data) of volumetric time-series forward-modelling simulations on high performance computers.</li><li>Maintained data organization and version control with Github and interacted with analysis code via the terminal through Linux/Unix and Bash shell scripting.</li></ul>
July 2019	<b>Attendee</b> International High Performance Computing Summer School, Kobe, Japan <ul style="list-style-type: none"><li>Topics covered: Parallel programming, MPI, OpenMP, HPC and Python, Scientific Visualization, Machine Learning</li></ul>
Sep 2013 – Aug 2017	<b>Plate Distribution Lead and Student Assistant for the Sloan Digital Sky Survey</b> University of Washington, Seattle, WA <ul style="list-style-type: none"><li>Started and organized the Plates for Education Program with the Education and Public Outreach team.</li><li>Organized retired plug plates and created corresponding posters for distribution to high schools.</li><li>Hosted 8 high school teachers at UW to teach them about the plates and educational resources.</li><li>Conducted quality assurance on the aluminum plug plates used by Sloan by measuring their accuracy on a Coordinate Measuring Machine.</li><li>Re-aluminized the 3.5m mirror at the Apache Point Observatory in Sunspot, New Mexico.</li></ul>

- Sep 2013 – Aug 2017     **Student Research Assistant** University of Washington, Seattle, WA
- Simulated radiative transfer using the post-processing code SKIRT to generate spectral energy distributions of simulated galaxies.
  - Utilized a supercomputer, Comet, to run and access cosmological simulations to conduct data analysis and statistics using Python. Libraries and packages used: Pynbody, Numpy, Astropy, Matplotlib, SciPy
- Sep 2016     **Attendee** Woodruff Scientific Computing Bootcamp, University of Washington, Seattle, WA
- Learned the basics of how to model, simulate, and analyze plasma. Worked on the National Energy Research Scientific Computing Center's computer, Edison.

### Publications

- **Danielle Skinner**, J. H. Wise, 2023, "Neutron Star Mergers and their Impact on Second Generation Star Formation in the Early Universe". Submitted to MNRAS.
- C. Brummel-Smith, **Danielle Skinner**, S. Sethuram, J. H. Wise, B. Xia, K. Taori, 2023, "Inferred galaxy properties during Cosmic Dawn from early JWST Photometry Results". MNRAS, 525, 4405.
- **Danielle Skinner**, J. H. Wise. 2020, "Cradles of the first stars: self-shielding, halo masses, and multiplicity". MNRAS, 492, 4386
- B. Lundgren et al. incl. **Danielle Skinner**, 2019, "Data-driven education and public outreach with the Sloan Digital Sky Survey". Boletín de la Asociación Argentina de Astronomía 61a 261
- J. Wilson et al. incl. **Danielle Skinner**, 2019, "The Apache Point Observatory Galactic Evolution Experiment (APOGEE) Spectrographs", PASP 131 055001
- M. Blanton et al. incl. **Danielle Skinner**, 2017, "Sloan Digital Sky Survey IV: Mapping the Milky Way, Nearby Galaxies and the Distant Universe", AJ 154 28

### Presentations

- **Danielle Skinner**, John H. Wise. Nucleosynthesis from Neutron Star Mergers in the Early Universe. American Astronomical Society, Seattle, WA, January 2023 (Dissertation Talk)
- **Danielle Skinner**, John H. Wise. Cradles of the first stars: self-shielding, halo masses and multiplicity. From Stars to Galaxies II, Gothenburg, Sweden, June 2022 (Poster)
- Jennifer Mead, Kaley Brauer, Alexander Ji, John Wise, Greg Bryan, Mordecai-Mark Mac Low, Andrew Emerick, Anna Frebel, Benoit Cote, **Danielle Skinner**, Corey Brummel-Smith. Early chemical enrichment of dwarf galaxies in star-by-star cosmological simulations. American Astronomical Society, Pasadena, CA, June 2022 (Poster)
- **Danielle Skinner**, John H. Wise. Cradles of the first stars: self-shielding, halo masses and multiplicity. First Stars VI, Concepción, Chile, March 2020 (Poster)
- **Danielle Skinner**, John H. Wise. Where do Population III Stars Form? The Effects of Radiative Feedback and Self-Shielding on the Host Halo Mass Distribution. American Astronomical Society, Seattle, WA, January 2019 (Poster)
- **Danielle Skinner**, John H. Wise. Where do Population III Stars Form? The Effects of Radiative Feedback and Self-Shielding on the Host Halo Mass Distribution. Stellar Archaeology as a Time Machine to the First Stars, Poster Session, Institute of the Physics and Mathematics of the Universe, Tokyo, Japan, December 2018
- **Danielle Skinner**, Karen Masters, Kate Meredith. SDSS Plates for Education. Talk presented at the SDSS Collaboration Meeting. Madison, Wisconsin, June 2016.
- **Danielle Skinner**, Kate Meredith, Karen Masters, Nick MacDonald. Distribution Sloan Digital Sky Survey Plates and Posters as Interactive Teaching Tools. American Astronomical Society, Kissimmee, FL, January 2016 (Poster)
- **Danielle Skinner**, Lauren M. Anderson, Thomas R. Quinn, Fabio Governato, Michael Tremmel. Dust Attenuation at High Redshift. American Astronomical Society, Seattle, WA, January 2015.

## Honors & Awards

2022	<b>Amelio Travel Award (\$1,000)</b> Funding to travel to Sweden for the From Stars to Galaxies II Conference.
2020	<b>FINESST Grant (\$135,000)</b> Future Investigators in NASA Earth and Space Science and Technology Research Grant. Funded three years of Ph.D. work.
2019	<b>Amelio Travel Award (\$1,000)</b> Funding to travel to Chile for the First Stars VI Conference.
2018	<b>Amelio Travel Award (\$1,000)</b> Funding to travel to Japan for the Stellar Archaeology as a Time Machine to the Frist Stars Conference.
2018	<b>Thank a Teacher Award</b> Award given to exceptional teachers by grateful students through a Georgia Tech Program.
2017, 2018	<b>SmartEvals “Gold Standard”</b> Reached top 30th percentile among teachers in: level of preparedness, management of classroom / lab environment, active engagement of students i.e., participation, group work, questions, etc.

## Certifications

Fall 2022	<b>Tech to Teaching Certificate</b> Center for Education, Teaching and Learning, Georgia Institute of Technology, Atlanta, GA
Spring 2022	<b>Associate Certificate</b> Center for the Integration of Research Teaching and Learning
Spring 2015	<b>Machine Shop Certificate</b> Machine Shop, University of Washington, Seattle, WA

## Skills

Data analysis, data visualization, data reduction, feature engineering, unstructured data, qualitative data, volumetric data, public speaking, technical writing, statistics, modern pedagogy

*Programming:* Python, C++, Yt, Numpy, JSON, SciPy, Jupyter, H5py, Matplotlib, Git, Linux/Unix, HTML, Bash scripting, Slurm, LaTeX, Mac/Windows

## Service & Committees

Aug 2022 – Present	<b>Co-founder</b> Physics Allies for Wellness, Georgia Institute of Technology, Atlanta, GA
July 2020 – Present	<b>Mentoring Chair</b> Graduate Association of Physicists, Georgia Institute of Technology, Atlanta, GA
Aug 2021 – Aug 2022	<b>Graduate Student Representative</b> Diversity, Equity, and Inclusion Committee, School of Physics, Georgia Institute of Technology, Atlanta, GA
Jan 2019 – May 2020	<b>Physics Representative</b> Graduate Student Diversity Council, College of Sciences, Georgia Institute of Technology
May 2019 – July 2020	<b>President</b> Graduate Association of Physicists, Georgia Institute of Technology, Atlanta, GA
May 2018 – May 2019	<b>Secretary / Treasurer</b> Graduate Association of Physicists, Georgia Institute of Technology, Atlanta, GA

## Outreach

Nov 2019, Apr 2019	<b>STEMPower</b> Georgia Institute of Technology, Atlanta, GA. Teach Girl Scouts about the evolution and formation of galaxies and show them 3D movies of our simulations.
Nov 2018	<b>Step into STEM</b> Georgia Institute of Technology, Atlanta, GA. Demonstrated different angular momentum examples that students of all ages could interact with.
Mar 2018	<b>Taste of Science</b> Atlanta Science Festival, Georgia Institute of Technology, Atlanta, GA. Discussed the crystal structure of chocolate and allowed the public to try untempered and tempered chocolate.

### Students Advised

- Nezir Alic, Graduate Student, 2022 - Present
- Samantha Hardin, Graduate Student, 2022 - Present
- Bin Xia, Graduate Student, 2022 - Present
- Rohan Srivastava, Undergraduate Student, 2019 - 2022
- Katarine Klitzke, Undergraduate Student, 2019 – 2021
- Annie Truong, Undergraduate Student, 2019 – 2020
- Tien Nguyen, Undergraduate Student, 2019 – 2020
- Khushi Taori, Undergraduate Student, 2019 - 2020