Danielle Ruth Skinner

Curriculum Vitae

daniellerenniks@gmail.com | drenniks.github.io | linkedin.com/in/drenniks

Education

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

Research Experience

May 2018 - Present **Graduate Research Assistant** Georgia Institute of Technology, Atlanta, GA

- 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
- Created analysis pipelines to correlate neutron star merger parameters with star formation on large datasets (>40 Tb of data) of volumetric time-series forward-modelling simulations on high performance computers.
- Maintained data organization and version control with Github and interacted with analysis code via the terminal through Linux/Unix and Bash shell scripting.

July 2019 **Attendee** International High Performance Computing Summer School, Kobe, Japan

- Topics covered: Parallel programming, MPI, OpenMP, HPC and Python, Scientific Visualization, Machine Learning

Sep 2013 – Aug 2017 **Plate Distribution Lead for the Sloan Digital Sky Survey** University of Washington, Seattle, WA

- Started and organized the Plates for Education Program with the Education and Public Outreach team.
- Organized retired plug plates and created corresponding posters for distribution to high schools.
- Hosted 8 high school teachers at UW to teach them about the plates and educational resources.

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.

Teaching Experience

Aug 2017 – May 2018 **Graduate Teaching Assistant** Georgia Institute of Technology, Atlanta, GA

- Introductory Mechanics Labs (3 sections)
- Introductory Electromagnetism Labs (4 sections)

- Designed introductory lecture for each lab, assisted with lab set up and data collection and analysis, graded lab homework weekly, and exams.

Spring 2016 **Student Tutor** University of Washington, Seattle, WA

- Tutored introductory physics students. Topic covered: Mechanics

Publications

- **Danielle Skinner**, J. H. Wise, 2022, "Metal Mixing from Neutron Star Mergers in the Early Universe". In prep, advanced draft is available upon request.
- C. Brummel-Smith, **Danielle Skinner**, S. Sethuram, J. H. Wise, B. Xia, K. Taori, 2022, "Inferred galaxy properties during Cosmic Dawn from early JWST Photometry Results". Submitted to MNRAS.
- **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 **Amelio Travel Award** (*$1,000*) Funding to travel to Sweden for the From Stars to Galaxies II Conference.

2020	**FINESST Grant** (*$135,000*) Future Investigators in NASA Earth and Space Science and Technology Research Grant. Funded three years of Ph.D. work.
2019	**Amelio Travel Award** (*$1,000*) Funding to travel to Chile for the First Stars VI Conference.
2018	**Amelio Travel Award** (*$1,000*) Funding to travel to Japan for the Stellar Archaeology as a Time Machine to the Frist Stars Conference.
2018	**Thank a Teacher Award** Award given to exceptional teachers by grateful students through a Georgia Tech Program.
2017, 2018	**SmartEvals "Gold Standard"** 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	**Tech to Teaching Certificate** Center for Education, Teaching and Learning, Georgia Institute of Technology, Atlanta, GA
Spring 2022	**Associate Certificate** Center for the Integration of Research Teaching and Learning
Spring 2015	**Machine Shop Certificate** 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	**Co-founder** Physics Allies for Wellness, Georgia Institute of Technology, Atlanta, GA
July 2020 – Present	**Mentoring Chair** Graduate Association of Physicists, Georgia Institute of Technology, Atlanta, GA
Aug 2021 – Aug 2022	**Graduate Student Representative** Diversity, Equity, and Inclusion Committee, School of Physics, Georgia Institute of Technology, Atlanta, GA
Jan 2019 – May 2020	**Physics Representative** Graduate Student Diversity Council, College of Sciences, Georgia Institute of Technology
May 2019 – July 2020	**President** Graduate Association of Physicists, Georgia Institute of Technology, Atlanta, GA
May 2018 – May 2019	**Secretary / Treasurer** Graduate Association of Physicists, Georgia Institute of Technology, Atlanta, GA

Outreach

Nov 2019, Apr 2019	**STEMPower** 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	**Step into STEM** Georgia Institute of Technology, Atlanta, GA. Demonstrated different angular momentum examples that students of all ages could interact with.
Mar 2018	**Taste of Science** 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