Danielle Ruth Skinner

Curriculum Vitae

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**Education**

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| 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**

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| 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 and Student Assistant 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. * Conducted quality assurance on the aluminum plug plates used by Sloan by measuring their accuracy on a Coordinate Measuring Machine. * Re-aluminized the 3.5m mirror at the Apache Point Observatory in Sunspot, New Mexico. |
| 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**

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| 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**

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| * **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**

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| * **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**

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| 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**

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| 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**

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| 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**

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| 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**

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| * 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 |