Andrew Wu

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# Education

**Georgia Institute of Technology Exp. Grad: May 2025**

*PhD, Physics | GPA: 4.0 Atlanta, GA*

**Princeton University Jun 2020**

*AB, Astrophysical Sciences* | *Magna Cum Laude | GPA: 3.7 Princeton, NJ*

# Work Experience

**Teaching Assistant (TA): Introductory Physics I (Mech.) & II (E&M)** **Aug 2020 - Present**

*Supervisors: Dr. Emily Alicea-Muñoz & Dr. Ed Greco Georgia Institute of Technology, GA*

Head TA Jan 2022-Present

* Lead weekly TA meetings, answer questions on online student forum, timed exams/wrote exam keys

Lab TA Aug 2020-Dec 2021

* Taught two (remote) weekly 3-hour lab sessions with 30 students each for Intro Physics I and II

**National Center for Civil and Human Rights Summer 2015**

Education Dept. Intern Atlanta, GA

* Aligned museum exhibit content to meet the state academic standards of AL, GA, NC, SC, and TN
* Researched human rights history, wrote blog post for website, and recommended improvements to human rights exhibit

# Research Experience

**Special Problem May 2021-Present**

*Advisor: Professor Zeb Rocklin Georgia Institute of Technology, GA*

* Investigating the spatially complex nonunfiform modes of deformation of four-parallelogram origami, using mathematical theory, numerics in Mathematica, and the origami force-balancing simulation software MERLIN

**Undergraduate Senior Thesis** **Sep 2019-May 2020**

*Advisor: Professor David Spergel & Dr. Villaescusa-Navarro Princeton University, NJ*

* Applied various machine learning methods to dark matter cosmological simulations to predict the formation of voids billions of years in advance and investigate the nature of dark matter and dark energy

**Undergraduate Summer Research Program (USRP)** **Jun-Jul 2019**

*Advisor: Dr. Renyue Cen Princeton University, NJ*

* Combined global trends of cold gas parameters and visualizations of simulation made with HPC to extend theory of spiral galaxy formation to include environment and make empirically testable predictions regarding spiral galaxy formation

**Spring Junior Paper (JP)** **Spring 2018-2019**

*Advisor: Dr. Renyue Cen Princeton University, NJ*

* Identified key physical parameters of cold gas streams for galaxy formation in hydrodynamic cosmological simulation
* Discovered global trends in the numerics of cold gas stream parameters with respect to environment and redshift

**Fall Junior Paper (JP)** **Fall 2018-2019**

*Advisor: Professor Joshua Winn, Graduate student collaborator: Fei Dai Princeton University, NJ*

* Fit radial velocity (RV) curves to timeseries data of Proxima Centauri, confirming periodic signal of Proxima b
* Identified signal of planetary candidate Proxima c before the official public announcement in April 2019

# Presentations and Invited Lectures

**Summer Research/Spring Junior Paper Presentation** **2019 Aug 8**

Undergraduate Summer Research Program: *“How do spiral galaxies form?”*

**Fall Junior Paper Presentation 2019 May 9**

Princeton Research Day: *“Proxima Centauri b: The Second Season of High-Cadence Radial-Velocity Data”*

**Fall Junior Paper Presentation** **2019 Mar 30**

Junior Paper Symposium: *“Proxima Centauri b: The Second Season of High-Cadence Radial-Velocity Data”*

**Award**: Best Astrophysics Presentation

# Languages, Honors, and Skills

**Fulbright Student Semifinalist Jan 2020**

**Endorsed by Princeton University for Rhodes Scholarship** **Oct 2019**

**German**: U.S. State Dept. Proficiency: Level 2 | **Mandarin**: Level 1 | **Latin**: Proficient reading & intermediate writing

**Programming**: Java, Python, MATLAB | **Skills**: Data Visualization, MS Office, LateX | **Platforms**: Windows, Linux

# Community Service

**Atlanta Community Food Bank Sep 2021**

*Princeton Club of GA Pawlunteer Atlanta, GA*

**Undergrad Student Government (USG) Mental Health Initiative** **Oct 2018 – Oct 2019**

*Co-chair Princeton, NJ*

* Founder, organizer and keynote speaker for Princeton’s inaugural, and now annual, campus-wide mental health forum, **Mental Health Matters**, aimed at destigmatizing mental illness **(2019 April 5)**
* Result: coordinated social media/Facebook publicity campaign including advertisement to the physics and astrophysics departments; received email from graduate student concerning how my speech deeply resonated with her and had follow-up meeting; audience member took notes of my suggestions during Q&A
* Helped coordinate USG’s annual Mental Health Week, including installation of the national **Attitudes In Reverse: In Their Shoes** exhibit on campus **(2019 Feb 18-22)**
* Established regular coordination between the previously siloed undergrad and graduate mental health groups

**Princeton Student Climate Initiative** **Sep 2019 – Mar 2020**

*Taskforce Lead Princeton, NJ*

* Kickstarted initiative to establish plastic-free zones on campus
* Collected Scope III carbon emissions data and reported to Sustainability Office

**Loaves and Fishes Soup Kitchen, Cathedral of St. Mary’s of the Assumption** **Fall 2016 – Fall 2017**

*Volunteer Trenton, NJ*

**Princeton Community Action Service Trip Sep 2016**

*Volunteer (Fields Center, Princeton Nursery, and Princeton United Methodist Church (PUMC)) Princeton, NJ*

* Organized and distributed school supplies to local underprivileged students, cared for kids at nursery,
* Helped run soup kitchen and clothing donation at PUMC

# International Experiences

**Princeton Global Seminar: Beijing, China Summer 2018**

* Sociology seminar with Peking University students on contemporary Chinese society in English

**Princeton in Munich: Munich, Germany Summer 2017**

* Studied German language and literature, visiting relevant cultural sites

# Independent Interests

**Author: *Space, Time, and the Universe* Jan. 2010 – Present**

* Goals: publicize astrophysics, provide a lively and informative reference for young (high school/college age) students, connect the conceptual and the mathematical in order to make both intuitive and appealing

**Author: *Quaestio Principiorum Platonis* Jun. 2016 – Present**

* Goal: formulate a scientifically-motivated philosophical framework to account for all known natural phenomena and conceptual possibilities starting from a single logical assumption

**Author: *Heaven on Earth* Apr 2017**

* Dystopic science-fiction short story

**Violin 2007 – Present**

* School Orchestra, 2007-2016; Private lessons, 2016-2019; Recital performance, Spring 2019

**Scientific Outreach Oct 2019 – Present**

* Volunteered at tables at Atlanta Science Festival Step Into Stem event at GA Tech: lava lamps and origami
* Hosted public observing night at Princeton Observatory (**2019 Oct 2**)