

# Corbin Taylor

Software Development Engineer and Astrophysicist

September 22, 2021

**Email:** [cjtaylor2390@gmail.com](mailto:cjtaylor2390@gmail.com)

**GitHub:** <https://github.com/cjtaylor1990>

**LinkedIn:** <https://www.linkedin.com/in/corbin-taylor/>

**Webpage:** <https://www.astro.umd.edu/~cjtaylor/>

## Education

### University of Maryland

*Ph.D. Candidate Astronomy & M.S. Astronomy*

College Park, MD

2013-2021

- Specialized in computational Black Hole Astrophysics and Cosmology.

### University of Toledo

*B.S. Astrophysics & B.S. Pure Mathematics*

Toledo, OH

2008-2013

- Cumulative GPA: 3.81
- Graduated Magna Cum Laude with Physics Departmental Honors

## Skills

- **Front-End Technologies:** JavaScript (React, Redux, React Query, Jest, Cypress), Ruby, HTML, CSS
- **Back-End Technologies:** Java (Spring, JUnit, Mockito), Python, C++, C, SQL, MongoDB, Docker, Kubernetes
- **Cloud Technologies:** AWS SDK, AWS CLI, AWS Console (DynamoDB, S3, EC2, Lambda)
- **Operating Systems, Servers, & Networking:** Bash, Zsh, Shell scripting, Linux, OS X, Nginx
- **IDEs & Editors:** VS Code, IntelliJ, PyCharm, Vim, Emacs
- **Leadership & Communication:** Proficient in project planning, task delegation, and collaborative problem solving. Experience with public speaking and mentoring.

## Work Experience

### Amazon Web Services - AWS Security

Jun 2020 - Present

*Software Development Engineer I*

- One of the main contributors to the development of a React web app that is used by tens-of-thousands of AWS employees to manage  $\sim 7 \times 10^5$  active accounts.
- Led in the development of Front-End integration tests and canaries using Cypress.
- Contributed to the development of the Java server back-end, including designing new APIs and implementing new security measures.
- Led and acted as a technical advisor on a cross-team effort to build a new solution for managing pre-Production AWS accounts, necessary for the development of the AWS Console.

### University of Maryland - Department of Astronomy

Jun 2014 - Jun 2020

*Graduate Research Assistant*

- Researched the properties of supermassive black holes and the Milky Way using computer simulations.
- Independently wrote scientific simulation and analysis software using Python and C++.

- Utilized SciPy and NumPy libraries to manipulate and analyze large data sets (up to  $\sim 1$  Tb) on the Deepthought 2 (U of Maryland) and Odyssey (Harvard) supercomputers.
- Used algorithmic thinking and creative problem solving to maximize program efficiency, decreasing both run-time and memory usage by up to a factor of  $10^3$  for  $\sim 10^{10}$  entries.
- Presented my work at 12 professional conferences and universities in the US and Europe.
- Independently prepared and published three scientific papers in major professional journals (Taylor & Reynolds 2018a,b; Taylor et al. 2016)

## Space Telescope Science Institute

Jun 2012 - Aug 2012

### *Summer Research Intern*

- Developed a data reduction and analysis pipeline for space telescope spectral data.
- Measured the properties of gas around galaxies using the Cosmic Origin Spectrograph on the Hubble Space Telescope.

## University of Toledo - Department of Physics and Astronomy

Jan 2009 - Aug 2013

### *Undergraduate Research Assistant*

- Cleaned and analyzed observational data taken by the 10m Hobby-Eberly Telescope.
- Found evidence for lithium production in supernovae by modeling absorption spectra (Taylor et al. 2012).

## Leadership Experience

## GRAD-MAP Diversity Program

May 2014 - Aug 2017

### *Team Member*

- Led the preparation and teaching of a multi-day Python workshop.
- Helped prepare and manage week-long research workshops that helped minority students develop skills necessary for a STEM career.
- Collaborated with minority-serving universities and colleges in Maryland, Virginia, and D.C.

## University of Maryland - Department of Astronomy

Jan 2017 - Apr 2017

### *Prospective Student Visit Coordinator*

- Led the preparation and execution of departmental visits for 19 potential Astronomy graduate students.
- Recruited, led, and delegated tasks to a planning committee of 10 graduate student volunteers.
- Successfully increased new graduate student recruitment rate by over 30% compared to previous years.

## University of Maryland - Department of Astronomy

Aug 2013 - May 2014

### *Graduate Teaching Assistant*

- Led 50 minute discussions with hands-on demonstrations for two sections once a week with an average of 20-30 students per section.
- Mentored struggling students during and outside of my weekly office hours.
- Graded homework, in-class assignments, and exams in a fair and timely manner.

## Select Publications

- Taylor, C. and Reynolds, C.S. 2018b; *X-Ray Reverberation From Black Hole Accretion Disks With Realistic Geometric Thickness*, ApJ, 868, 109
- Taylor, C. and Reynolds, C.S. 2018a; *Exploring The Effects of Disk Thickness On The Black Hole Reflection Spectrum*, ApJ, 855, 120
- Taylor, C.; Boylan-Kolchin, M.; Torrey, Paul; Vogelsberger, Mark; and Hernquist, Lars 2016; *The Mass Profile Of The Milky Way To The Virial Radius From The Illustris Simulation*, MNRAS 461, 3483
- Taylor, C.J.; Richey, A.M.; Federman, S.R.; and Lambert, D.L. 2012; *The  ${}^7\text{Li}/{}^6\text{Li}$  Isotope Ratio Near The Supernova Remnant IC 443*, ApJ 750 L15.