Corbin Taylor

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Software Development Engineer and Astrophysicist

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Education

University of Maryland College Park, MD
Ph.D. Candidate Astronomy & M.S. Astronomy *2013-2021*

- Specialized in computational Black Hole Astrophysics and Cosmology.

University of Toledo Toledo, OH
B.S. Astrophysics & B.S. Pure Mathematics *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 ∼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*, ApJl, 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 $^7Li/^6Li$ Isotope Ratio Near The Supernova Remnant IC 443*, ApJ 750 L15.