

Education

- **University of Maryland** College Park, MD
Ph.D. Candidate M.S. Astronomy 2013 -
 - Current GPA: 3.05
 - Currently a PhD candidate, focusing in theoretical and computational astrophysics.
 - Studies the X-ray signatures of supermassive black holes using computer simulations.
 - Committee: Dr. Christopher Reynolds, Dr. Coleman M. Miller, Dr. Richard Mushotzky
- **University of Toledo** Toledo, OH
B.S. Astrophysics & B.S. Pure Mathematics 2008-2013
 - Overall GPA: 3.81
 - Astrophysics GPA: 3.89
 - Pure Mathematics GPA: 3.60
 - Graduated Magna Cum Laude
 - Departmental Honors in Physics
- **University of Findlay** Findlay, OH
High School Dual-Enrollment 2007-2008
 - Overall GPA: 4.00

Research Experience

- **Publications**
 - García et al. 2019; *Probing the Black Hole Engine with Measurements of the Relativistic X-ray Reflection Component*, Astronomy 2020 Decadal White Paper, arXiv:1903.07130
 - 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
 - Knauth, D.C.; Taylor, C.J.; Ritchey, A.M.; Federman, S.R.; and Lambert, D.L. 2017; *Parsec-scale Variations in the ${}^7\text{Li}/{}^6\text{Li}$ Isotope Ratio Toward IC 348 And The Parsec OB 2 Association*, ApJ, 835, L16
 - 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.
 - Richey, A.M.; Taylor, C.J.; Federman, S.R.; and Lambert, D.L. 2012; *Lithium Isotope Ratios Near The Supernova Remnant IC 443*, Mem. S. A. It. Suppl. Vol. 22, 137.

- **Presentations**

- Talk at Dr. Karl Remeis Observatory, University of Erlangen-Nurnberg - Bamberg, Bavaria, DE
 - * Taylor, C.
Modeling Black Hole Reflection and Reverberation with Fenrir
23 July 2019
- Talk at University of Southampton - Southampton Hampshire, UK
 - * Taylor, C.
Modeling Black Hole Reflection and Reverberation with Fenrir
19 July 2019
- Poster at XCalibur 2019 - Winchester, Hampshire, UK
 - * Taylor, C., Reynolds, C. S., and Dauser, T.
Modelling the Black Hole Reflection Spectrum with Fenrir
15-18 July 2019
- Talk at Institute of Astronomy, University of Cambridge - Cambridge, Cambridgeshire, UK
 - * Taylor, C.
The Effects of Disk Thickness on AGN Reflection and Reverberation
9 July 2019
- Talk at AAS 233 - Seattle, WA
 - * Taylor, C.
The Effects of Disk Thickness on AGN Reflection and Reverberation
7 January 2019
- Talk at AXIS Workshop 2018 - Washington, D.C.
 - * Taylor, C.
The Effects Of Disk Thickness On The AGN Broad Iron Line
6 August 2018
- Talk at University of Durham - Durham, Durham, UK
 - * Taylor, C.
The Effects Of Disk Thickness On AGN X-Ray Reflection
29 June 2018
- Talk at University of Southampton - Southampton, Hampshire, UK
 - * Taylor, C.
The Effects Of Disk Thickness On AGN X-Ray Reflection And Reverberation
25 June 2018
- Talk at University of Oxford - Oxford, Oxfordshire, UK
 - * Taylor, C.
The Effects Of Disk Thickness On AGN X-Ray Reflection And Reverberation
18 June 2018
- Poster at AAS 2018 - Washington, D.C.
 - * Taylor, C. and Reynolds, C.S.
The Effects of Accretion Disk Thickness On The Black Hole Reflection Spectrum
8-12 January 2018
- Poster at HEAD 2017 - Sun Valley, ID
 - * Taylor, C. and Reynolds, C. S.
The Effects Of Accretion Disk Geometry On AGN Reflection Spectra
20-24 August 2017
- Poster at HEAD 2016 - Naples, FL

- * Taylor, C. and Reynolds, C. S.
Disk Geometry And The Black Hole Reflection
3-7 April 2016
- Undergraduate Colloquium at University of Toledo
 - * Fall 2009-2011; Spring 2010-2012
- Poster at WSU Undergraduate Physics Research Conference in Detroit, MI
 - * Taylor, C. J.; Ritchey, A. R.; Federman, S. R.; Lambert, D. L.
Li Production in Supernova Remnant IC 443
November 2009
- Poster at Posters at the Capital in Columbus, OH
 - * Taylor, C. J.; Ritchey, A. R.; Federman, S. R.; Lambert, D.L.
Lithium in IC 443: A Study in Light Element Synthesis
April 2011
- Poster at AAS meeting in Seattle, WA
 - * Ritchey, A. R.; Taylor, C. J.; Federman, S. R.; Lambert, D. L.
Interstellar Lithium and Rubidium in the Diffuse Gas Near IC 443
January 2010
- Talk at the Midwest Astrochemistry Meeting at UI in Urbana, IL
 - * Ritchey, A. R.; Taylor, C. J.; Federman, S. R.; Lambert, D. L.
The interstellar ${}^7\text{Li}/{}^6\text{Li}$ Ratio in the Diffuse Gas Near IC 443
November 2010

• Research Programs

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|---|-------------|
| – REU at University of Toledo | Summer 2010 |
| – REU at University of Michigan | Summer 2011 |
| – SASP at Space Telescope Science Institute | Summer 2012 |

• Data Used

- Illustris (Vogelsburger et al. 2014)
- Millennium-I (Springel et al. 2005)
- Hobby-Eberly Telescope HRS
- Copernicus UV
- Interstellar Medium Absorption Profile Spectrograph
- Sloan Digital Sky Survey Data Release 8
- Hubble Space Telescope Cosmic Origins Spectrograph EUV

Work Experience

- **University of Maryland - Department of Astronomy** June 2014 - Present
Graduate Research Assistant
 - Modeled the X-ray spectrum of AGN using fully relativistic computer simulations.
 - Analyzed data from massive multi-billion particle cosmological simulations
 - Created my own scientific simulation and analysis software using C++ and Python.
 - Independently prepared three scientific papers (Taylor & Reynolds 2018a,b; Taylor et al. 2016)

- Collaborated on the writing of a white paper for the Astronomy 2020 Decadal Survey (García et al. 2019)
- Presented my work a number of scientific conferences and universities.

- **University of Maryland - Department of Astronomy** August 2013 - May 2014
Graduate Teaching Assistant
 - Fall 2013: ASTR 100 - 0102, 0107
 - Spring 2014: ASTR: ASTR 100 - 0201, 0202
 - Prepared and gave 50 minute discussions for each section once a week.
 - Graded in-class materials, homework, and exams.
- **University of Toledo - Department of Physics and Astronomy** January 2009 - August 2013
Undergraduate Research Assistant
 - Reduced and analyzed data using standard tools of the field.
 - Led and participated in discussions on professional scientific literature.
 - Collaborated with individuals from many different universities.
 - Aided in the preparation of scientific publications.

Volunteer And Outreach Experience

- **University of Maryland - Department of Astronomy** Spring 2017
Prospective Student Visit Coordinator
 - Led the preparation for the prospective student visits on 9-11 March, 30 March, and 3 April 2017.
 - Recruited volunteers for the student-led planning committee.
 - Led the structuring of the planning committee and delegated tasks.
 - Organized the travel details of 19 prospective students.
 - Organized a visit to Goddard Space Flight Center in Greenbelt, MD.
- **GRAD-MAP Diversity Program** May 2014 - August 2017
Team Member
 - Collaborated with minority-serving universities and colleges in Maryland, Virginia, and D.C.
 - Helped prepare and manage a week-long workshop for January 2016 and January 2017 that helped minority students develop skills necessary for a STEM career.
 - Led the preparation and teaching of a multi-day Python workshop as part of the GRAD-MAP 2017 Winter Workshop

Awards, Grants & Honours

C.V. Wolfe Scholarship in the Natural Sciences	2011-2012; 2012-2013
Chad Tabory Award for Outstanding Undergraduate Research	2010
Sigma Pi Sigma Membership	2010
Pi Mu Epsilon Membership	2010
National Society of Collegiate Scholars Membership	2009
President's List	Spring 2009; Fall 2009; Fall 2011; Fall 2012
Dean's List	Spring 2010; Fall 2010
Rocket Gold Scholarship	Fall 2008-Spring 2012
First Generation Award	Fall 2008-Spring 2012

Skills

- Programming and Markup Languages
 - **Expert:** C++, Python (2 & 3)
 - **Intermediate:** IDL
 - **Basic:** HTML, CSS
- Field-Specific Software
 - **Expert:** IRAF
 - **Intermediate:** GALFIT, SExtractor
 - **Basic:** Veusz
- General Software
 - **Expert:** UNIX/Linux, OS X, Microsoft Windows, Microsoft Excel, Microsoft PowerPoint
 - **Intermediate:** GitHub, LaTeX, Evernote, Notion, Jupyter
- Foreign Languages
 - **Elementary:** German