

Taylor L. Tobin

Assistant Professor Lyman Briggs College, Michigan State University
tobinta1@msu.edu • tlto bin.wordpress.com
 orcid.org/0000-0001-8103-5499

PROFESSIONAL APPOINTMENTS	Assistant Professor	2026 – present
	Michigan State University, Lyman Briggs College	
	Postdoctoral Research Associate	2022 – 2026
	University of Michigan, Department of Astronomy PI: Prof. Michael R. Meyer Formation and Evolution of Planetary Systems (FEPS) Group METIS UM Local Project Manager (2022-2023)	
	Postdoctoral Research Associate	2019 – 2022
EDUCATION	University of Notre Dame, Department of Physics PI: Prof. Jeffrey Chilcote SCEXAO/CHARIS Collaboration	
	University of Illinois Urbana-Champaign , Urbana, Illinois, USA	
	▪ Ph.D. in Astronomy	Dec. 2019
	• Thesis: Observational and Theoretical Studies of SiO Maser Polarization toward Late-Type Evolved Stars: Insights from EVPA Reversal Features	
	• Advisor: Prof. Athol J. Kemball	
	▪ M.S. in Astronomy	2018
	Indiana University Bloomington , Bloomington, Indiana, USA	
	▪ B.S. in Astronomy	2013
	• Honors Thesis: Transmission Spectroscopy for Extrasolar Planet WASP-3b	
	• Advisor: Will I. Clarkson	
CERTIFICATION	• Departmental Honors, Hutton Honors Notation, Highest Distinction	
	▪ B.S. in Physics	2013
	• Minor: Mathematics	
	• Hutton Honors Notation, Highest Distinction	
	Teacher Scholar Certificate	2019
AWARDS & FELLOWSHIPS	Center for Innovation in Teaching and Learning, UIUC	
	Graduate Teacher Certificate	2016
	Center for Innovation in Teaching and Learning, UIUC	
	NSF Graduate Research Fellowship	2015 – 2018
	University of Illinois Urbana-Champaign (DGE – 1144245)	
MANAGEMENT & SCIENTIFIC LEADERSHIP	List of Teachers Ranked as Excellent	2014
	University of Illinois Urbana-Champaign	
	McCreery Travel Award	2013
	Indiana University Bloomington	
	Hutton Honors College Research Grant	2011
	Indiana University Bloomington	
	Local Project Manager	2022 – 2023
	For the METIS Consortium at University of Michigan	
	Research Supervision & Mentoring	
	University of Michigan Undergraduate Students: 1	2024 – 2025
	University of Notre Dame Undergraduate Students: 2	2019 – 2022

STUDENT RESEARCH EXPERIENCE	Graduate Research Assistant	2015 – 2019
	University of Illinois Urbana-Champaign, Department of Astronomy Advisor: Prof. Athol J. Kemball NSF Graduate Research Fellowship (2015 – 2018; Grant No. DGE-1144245)	
	Graduate Research Assistant	2014 – 2015
	University of Illinois Urbana-Champaign, Department of Astronomy Advisor: Prof. Paul Ricker	
	Undergraduate Researcher	2012 – 2013
	Indiana University Bloomington, Department of Astronomy Advisor: Prof. Will I. Clarkson Hutton Honors College Research Grant	
	Summer Undergraduate Researcher (REU)	2012
	Texas A&M University, Astronomical Instrumentation Laboratory Advisor: Prof. Darren DePoy	
	Undergraduate Researcher	2009 – 2012
TEACHING & MENTORING	Indiana University Bloomington, Department of Astronomy Advisor: Prof. Catherine Pilachowski	
	Graduate Mentor	2014 – 2019
	Women in Astronomy Mentoring Program, University of Illinois • Career development mentoring for 3 undergraduate students	
	Graduate Teaching Assistant	2013 – 2015, 2018 – 2019
	Department of Astronomy, University of Illinois Urbana-Champaign • Substitute Lecturer for introductory Astronomy classes for majors and non-majors • Assembled homework questions for non-major introductory Astronomy courses. • Assembled answer keys for graduate level course. • Planned and led discussion sections. Grading. Office Hours.	
PUBLICATIONS	JOURNALS	
	- Lin, Y.-C., Leisenring, J., Wolff, (incl. <u>Tobin, T. L.</u>) 2026, "JWST/NIRCam Imaging of Young Stellar Objects. IV. Detailed Imaging of the Protoplanetary Disk around TW Hya", Accepted for publication in The Astronomical Journal (AJ), arXiv:2607.23992. - Currie, T., Li, Y., El Morsy, M., et al. (incl. <u>Tobin, T. L.</u>) 2026, "SCEXAO/CHARIS and Gaia Direct Imaging and Astrometric Discovery of a Superjovian Planet 3–4 λ/D from the Accelerating Star HIP 54515", The Astronomical Journal, 171, 5. - El Morsy, M., Currie, T., Lacy, B., et al. (incl. <u>Tobin, T. L.</u>) 2025, "OASIS Survey Direct Imaging and Astrometric Discovery of HIP 71618 B: A Substellar Companion Suitable for the Roman Coronagraph Technology Demonstration", The Astrophysical Journal, 995, L4. - Bovie, D., Currie, T., El Morsy, M. et al. (incl. <u>Tobin, T. L.</u>) 2025, "Multi-band Spectral and Astrometric Characterization of the HIP 99770 b Planet with SCEXAO/CHARIS and Gaia", The Astronomical Journal, 170, 254. - El Morsy, M., Currie, T., Bovie, D., et al. (incl. <u>Tobin, T.</u>) 2025, "Dynamical and Atmospheric Characterization of the Substellar Companion HD 33632 Ab from Direct Imaging, Astrometry, and Radial-velocity Data", The Astrophysical Journal, 981, 20. - Bowens, R., Leisenring, J., Meyer, M. R., et al., (incl. <u>Tobin, T. L.</u>) 2025, "Commissioning of the MIRAC-5 Mid-infrared Instrument on the MMT", Publications of the Astronomical Society of the Pacific, 137, 014401. - Li, Y., Brandt, T. D., Franson, K., et al., (incl. <u>Tobin, T.</u>) 2024, "The Keck-HGCA Pilot Survey - II. Direct imaging discovery of HD 63754 B, a 20 au massive companion near the hydrogen burning limit", Monthly Notices of the Royal Astronomical Society, 533, 3501. Tobin, T. L., Currie, T., Li, Y., et al. 2024, "Direct-imaging Discovery of a Substellar Companion Orbiting the Accelerating Variable Star HIP 39017", The Astronomical Journal, 167, 205. - Currie, T., Brandt, G. M., Brandt, T. D., et al., (incl. <u>Tobin, T.</u>) 2023, "Direct imaging and astrometric detection of a gas giant planet orbiting an accelerating star", Science, 380, 198. Tobin, T. L., Gray, M. D., Kemball, A. J. 2023, "Polarized Maser Emission with In-source Faraday Rotation", The Astrophysical Journal, 943, 123.	

- Swimmer, N., Currie, T., Steiger, S., et al., (incl. Tobin, T.) 2022, "SCEXAO and Keck Direct Imaging Discovery of a Low-mass Companion Around the Accelerating F5 Star HIP 5319", The Astronomical Journal, 164, 152.
- Kuzuhara, M., Currie, T., Takarada, T., et al., (incl. Tobin, T.) 2022, "Direct-imaging Discovery and Dynamical Mass of a Substellar Companion Orbiting an Accelerating Hyades Sun-like Star with SCEXAO/CHARIS", The Astrophysical Journal, 934, L19.
- Currie, T., Lawson, K., Schneider, G., et al., (incl. Tobin, T.) 2022, "Images of embedded Jovian planet formation at a wide separation around AB Aurigae", Nature Astronomy, 6, 751–759.
- Chilcote, J., Tobin, T., Currie, T., et al. 2021, "SCEXAO/CHARIS Direct Imaging of A Low-mass Companion At A Saturn-like Separation from an Accelerating Young A7 Star", The Astronomical Journal, 162, 251.
- **Tobin, T. L.**, Kembball, A. J., & Gray, M. D. 2019, "Constraining Theories of Polarized SiO Maser Transport: Multi-epoch Analysis of a $\pi/2$ Electric Vector Rotation Feature", The Astrophysical Journal, 871, 189.

SPIE PROCEEDINGS

- Miller, A. L., Leisenring, J., Meyer, M., et al., (incl. Tobin, T. L.) 2025, "MIRAC-5 on the MMT with MAPS: annular groove phase mask N-band coronagraphic upgrade", Techniques and Instrumentation for Detection of Exoplanets XII, 13627, 136271O.
- Bowens, R., Meyer, M. R., Tobin, T. L., et al., 2024, "Characterization of a longwave HgCdTe GeoSnap detector", X-Ray, Optical, and Infrared Detectors for Astronomy XI, 13103, 1310325.
- Serra, B., Ives, D. J., Accardo, M., et al., (incl. Tobin, T. L.) 2024, "METIS first light imager and spectrograph for the ELT: overview of the near and mid-infrared detector subsystems", X-Ray, Optical, and Infrared Detectors for Astronomy XI, 13103, 131031U.
- El Morsy, M., Currie, T., Kuzuhara, M., et al., (incl. Tobin, T. L.) 2024, "Design, scientific goals, and performance of the SCEXAO survey for planets around accelerating stars", Adaptive Optics Systems IX, 13097, 130977I.
- **Tobin, T. L.**, Pal, J., Chilcote, J., et al. 2022, "Status of the Automated Data Extraction, Processing, and Tracking System (ADEPTS) for CHARIS/SCEXAO", Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, 12189, 121892C.
- Currie, T., Brandt, T. D., Kuzuhara, M., et al., (incl. Tobin, T.) 2021, "A new type of exoplanet direct imaging search: a SCEXAO/CHARIS survey of accelerating stars", Techniques and Instrumentation for Detection of Exoplanets X, 11823, 1182304.
- **Tobin, T. L.**, Chilcote, J., Brandt, T., et al. 2020, "The automated data extraction, processing, and tracking system for CHARIS", Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, 11452, 114521D.

OTHER CONFERENCE PROCEEDINGS (FIRST AUTHOR)

- **Tobin, T. L.**, Kembball, A. J., & Gray, M. D. 2018, "Constraining Theories of SiO Maser Polarization: Analysis of a $\pi/2$ EVPA Change", Astrophysical Masers: Unlocking the Mysteries of the Universe, 336, 53.

RESOURCES AWARDED

P.I. OR LEAD AUTHOR

- "The Time Is Now: Last Chance to Snare the Mid-Infrared Glow of Jupiter's Real Twin" JWST C5
PI: Y. Li • Role: **Co-PI**
JWST Cycle 5, MIRI, General Observer, Requested: 68.3 hours
- "MIRAC-5+MAPS: Characterizing disks of wide-orbit companions" S24B
PI: J. Leisenring • Role: **Lead Author of Proposal**
MMT, MIRAC-5/MAPS Engineering, 4.0 nights

- “A Direct Imaging Search for Planets Around Young, Accelerating BAF Stars” S22B
PI: J. Lozi • Role: **Lead Author of Proposal**
Subaru Telescope, CHARIS/SCEXAO, 3.0 nights
- “A Direct Imaging Search for Planets Around Young, Accelerating BAF Stars” S22A
PI: J. Lozi • Role: **Lead Author of Proposal**
Subaru Telescope, CHARIS/SCEXAO, 2.5 nights
- “Magnetic Fields and Exoplanets in AGB Environments: Deep Observations with HSA” S17A
PI: T. L. Tobin
Long Baseline Observatory (LBO), Very Long Baseline Array (VLBA/17A-178), 34.0 hours

CO-I

- **“A SCEXAO/CHARIS Intensive Direct Imaging Survey for Planets Around Accelerating Stars”** S24A – S26A
PI: T. Currie • Role: Co-I
Subaru Telescope, CHARIS/SCEXAO, **Intensive Proposal, 32 nights over 5 semesters**
- “The MIRAC-5 Coronagraph Upgrade: Commissioning and Early Science” S26A
PI: J. Leisenring • Role: Co-I
MMT, MIRAC-5/MAPS Engineering, 4.0 nights
- “A MIRAID Coronagraph: Commissioning an N-Band AGPM Upgrade for MIRAC-5” S25B
PI: J. Leisenring • Role: Co-I
MMT, MIRAC-5/MAPS Engineering, 4.0 nights
- ”Deep Direct Imaging of Candidate Planets around Young Sun-like Stars with Proper Motion Accelerations ” S25B
PI: M. Kuzuhara • Role: Co-I
Subaru Telescope, CHARIS/SCEXAO, 1.0 nights
- “Supporting the Roman Space Telescope by Identifying Key, New Targets for the CGI Technological Demonstration” S24A – S25A
PI: T. Currie • Role: Co-I
NASA-Keck Roman CGI Support
Keck Telescope, NIRC2-PY, **8 nights over 4 semesters**
Subaru Telescope, SCEXAO/CHARIS, **2 nights over 4 semesters**
- ”A Targeted Search for the Youngest Accreting Exoplanets” S24B
PI: G. Cugno • Role: Co-I
Magellan Clay Telescope, MagAO-X, 1.0 nights
- ”Deep Direct Imaging of Candidate Planets around Young Sun-like Stars with Proper Motion Accelerations ” S24B
PI: M. Kuzuhara • Role: Co-I
Subaru Telescope, CHARIS/SCEXAO, 1.5 nights
- ”Deep Direct Imaging of Candidate Planets around Young Sun-like Stars with Proper Motion Accelerations ” S24A
PI: M. Kuzuhara • Role: Co-I
Subaru Telescope, CHARIS/SCEXAO, 1.5 nights
- “MIRAC-5: AO-supported mid-IR imaging of wide-orbit companions” S24A
PI: J. Leisenring • Role: Co-I
MMT, MIRAC-5/MAPS, 4.0 nights
- ”Second-Epoch Confirmation of New Directly-Imaged Planet Candidates Around Accelerating Stars” S23B
PI: T. Currie • Role: Co-I
Subaru Telescope, CHARIS/SCEXAO, 1.5 nights
- ”Deep Direct Imaging of Candidate Planets around Young Sun-like Stars with Proper Motion Accelerations” S23B
PI: M. Kuzuhara • Role: Co-I
Subaru Telescope, CHARIS/SCEXAO, 1.5 nights
- “Commissioning of MIRAC-5 II: An AO-supported mid-infrared imager” S23B
PI: J. Leisenring • Role: Co-I
MMT, MIRAC-5/MAPS Engineering, 4.0 nights

- "Characterization of a New, Benchmark Directly-Imaged Exoplanet with SCEXAO-CHARIS (resubmission)" S23A
 PI: T. Currie • Role: Co-I
 Subaru Telescope, CHARIS/SCEXAO, 1.5 nights
- "Second-Epoch Confirmation of New Directly-Imaged Planet Candidates Around Accelerating Stars" S23A
 PI: T. Currie • Role: Co-I
 Subaru Telescope, CHARIS/SCEXAO, 1.5 nights
- "Commissioning of MIRAC-5: An AO-supported mid-infrared imager" S23A
 PI: J. Leisenring • Role: Co-I
 MMT, MIRAC-5/MAPS Engineering, 3.0 nights
- "Characterizing the Planetary System Around AB Aurigae" S22B
 PI: T. Currie • Role: Co-I
 Subaru Telescope, CHARIS/SCEXAO, 1.0 nights
- "SCEXAO Confirmation of a Directly-Imaged Exoplanet Candidate Around an Accelerating F star" S22B
 PI: T. Currie • Role: Co-I
 Subaru Telescope, CHARIS/SCEXAO, 0.5 nights
- "Deep Direct Imaging of Candidate Cool Planets around Sun-like Stars with Proper Motion Accelerations" S22B
 PI: M. Kuzuhara • Role: Co-I
 Subaru Telescope, CHARIS/SCEXAO, 1.0 nights
- "Confirmation and Characterization of a New, Benchmark Directly-Imaged Exoplanet with SCEXAO/CHARIS" S22A
 PI: T. Currie • Role: Co-I
 Subaru Telescope, CHARIS/SCEXAO, 1.5 nights
- "Deep Direct Imaging of Candidate Planets around Young Sun-like Stars with Proper Motion Accelerations" S22A
 PI: M. Kuzuhara • Role: Co-I
 Subaru Telescope, CHARIS/SCEXAO, 1.5 nights

TALKS

INVITED

- "Pictures of Planets: Processing Images of Exoplanetary Systems in the Near and Mid-Infrared." Astro Imaging Workshop at Northwestern University. 2023 July 31; Evanston, Illinois, USA.
- "Pictures of Exoplanets around Accelerating Stars: A Direct Imaging Survey with SCEXAO/CHARIS." Astronomy Seminar for the University of Illinois at Urbana-Champaign. 2022 March 8; Urbana, Illinois, USA.

CONFERENCES & VISITING

- "Searching for Accreting Companions in the CQ Tau Circumstellar Disk with H-alpha Differential Imaging." Talk presented at the Gas Accretion in Planet formation (GAP) Conference. 2025 March 11. Max-Planck-Institut für Astronomie (MPIA), Heidelberg, Germany.
- "METIS Geosnap: Direct Imaging in the N-Band for the E-ELT." Lightning Talk presented at the Great Lakes Exoplanet Area Meeting (GLEAM). 2023 October 28. Bloomington, Indiana, USA.
- "Pictures of Exoplanets around Accelerating Stars: A Near-Infrared Direct Imaging Survey with SCEXAO/CHARIS." Post Doc Colloquium Series at the University of Michigan. 2022 October 6. Ann Arbor, Michigan, USA.
- "Pictures of Exoplanets Around Accelerating Stars: A Direct Imaging Survey with SCEXAO/CHARIS." Talk presented at COSE-JAM. 2021 December 9. Notre Dame, Indiana, USA.
- "Direct Imaging with SCEXAO/CHARIS: A Survey of Accelerating Stars." Talk presented at the Great Lakes Exoplanet Area Meeting (GLEAM). 2021 November 11; Ann Arbor, Michigan, USA.
- "SiO Maser Polarization as a Probe of AGB Circumstellar Environments." Astronomy Seminar for the University of Notre Dame. 2020 April 21; Virtual.
- "Observational & Theoretical Studies of SiO Maser Polarization Toward Late-Type Evolved Stars: Insights from EVPA Reversal Features." Thesis Talk at AAS 235. 2020 January 8; Honolulu, Hawai'i, USA.

- "SiO Maser Polarization and Exoplanets around Evolved Stars." Talk presented at the Star, Planet, and Formation Journal Club. 2018 September 18; Ann Arbor, Michigan, USA.
- "The Hunt for Exoplanets in the Radio." Talk presented at the University of Chicago Exoplanet Journal Club. 2018 August 28; Chicago, Illinois, USA.
- "Constraining Theories of SiO Maser Polarization: Analysis of a $\pi/2$ EVPA Change." Talk presented at the International Astronomical Union Symposium 336: Astrophysical Masers: Unlocking the Mysteries of the Universe. 2017 September 4; Cagliari (Sardinia), Italy.

SERVICE & OUTREACH

Introduction to ScopeSim for the ELT Workshop , University of Michigan Organizer/Facilitator	2025
• Hosted locally for those in the department who were unable to attend the larger workshop in Austria.	
FEPS Group Meeting Coordinator , University of Michigan	2025 – 2026
University of Michigan MDM and Magellan TAC , University of Michigan Committee Member/Reviewer (S25A)	2024
Stars, Planets, and Formation Journal Club , University of Michigan Co-organizer	2023 – 2024
Physics Department Diversity Committee , University of Notre Dame Committee Member	2020 – 2022
Women in Astronomy at UIUC , University of Illinois Urbana-Champaign (Now Society for Equity in Astronomy) Co-founder & Chair	2014 – 2019
• Co-creating and managing group • Coordinating and advertising regular meetings and networking events. • Co-creating and serving as the primary organizer (2016-2017) for a discussion group focusing on issues of equity and inclusivity in Astronomy and STEM, in general. • Creating and facilitating a graduate mentoring program for undergraduates (2014-17). • Overarching group manager, overseeing managers of multiple programs. • Organizing, advertising, & moderating panels for graduate students on the postdoc application process (2017, 2018) • Advocating within the department. Compiling and presenting suggestions from the group to the department for inclusive policy and infrastructure.	
Girls Astronomy Summer Camp , University of Illinois Urbana-Champaign	2016 – 2018
Solar Eclipse Viewing Event , University of Illinois Urbana-Champaign	2017
• Assisted in hosting Solar Eclipse Viewing event in Goreville, IL, including facilitating solar viewing and helping children make pinhole cameras. • Visiting local schools prior to the event to talk about the solar eclipse.	
Outreach to Schools, After School Programs, & Farmer's Market	2013 – 2017
• Visiting talks and Astronomy-related activities for elementary and high school students. (Independently organized near hometown.) • Outreach through AstroIllini, including Farmer's Market demos, and events at local schools and public libraries. • Participation in outreach events through the STEM-Fem Alliance, including Tap In Leadership Academy events at local schools.	