

Holden Truman

Astronomy Ph.D. Student, University of Illinois Urbana-Champaign
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Education

University of Illinois Urbana-Champaign Ph.D. in Astronomy	Champaign, IL August 2026 - Present
Milwaukee School of Engineering B.S. in Computer Engineering (4.0 GPA); Minors in Physics and Mathematics	Milwaukee, WI 2023-2026

Fellowships and Awards

2026-31	Equity Doctoral Fellowship University of Illinois Graduate College fellowship recognizing academic excellence and broadening access to doctoral education
2025	Wisconsin Space Grant Consortium Undergraduate Research Scholarship

Positions Held

2026-	Graduate Research Assistant , University of Illinois Urbana-Champaign
2024-26	Undergraduate Research Assistant , Milwaukee School of Engineering

Research Experience

Milwaukee School of Engineering Undergraduate Research Assistant Advisor: Adam Wright Collaborators: Anja von der Linden, Lucie Baumont, Prakruth Adari, Shuang Liang	May 2024 – Present
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Weak Lensing, Photometric Calibration, Statistical Inference

- Identified previously unrecognized blends in Subaru weak-lensing analysis of galaxy cluster A2390 using Euclid ERO data.
- Deblended sources using `Scarlet` and quantified impact on weak-lensing mass measurements.
- Demonstrated that the bias introduced by previously unrecognized blends on the WL mass measurement of A2390 is within uncertainty for prior analyses, showing earlier conclusions remain reliable
- Added Gaia DR3 as a reference survey to BIGMACS photometric calibration software.
- Rewrote $P(Z)$ mass pipeline from `PyMC2` to `PyMC5` and implemented MCMC methods.
- Verified radial trends are constrained down to 500kpc from cluster center in galaxy cluster WL, closer than prior radial cut

Publications

Manuscripts in preparation (anticipated 2026 submission):

- Wright, von der Linden, Baumont, **Truman**, et al.
Subaru Weak Lensing Mass Measurements of Relaxed Galaxy Clusters. (MNRAS)
- Baumont, von der Linden, ..., **Truman**, et al.
DECam Weak Lensing Mass Measurements of Relaxed Galaxy Clusters. (MNRAS)

- Baumont, von der Linden, ..., **Truman**, et al.
Cosmological Constraints from Relaxed Galaxy Clusters. (MNRAS)

Conference Presentations

- Jan. 2026 **247th AAS Conference** "Utilizing space-based images to quantify and mitigate blending systematics in ground-based galaxy cluster mass measurements" Phoenix, AZ
- Aug. 2025 **Rubin Community Workshop** "Leveraging space-based images to identify and distinguish blended sources in ground-based galaxy cluster images" Tucson, AZ
- Aug. 2025 **Wisconsin Space Conference** "Leveraging space-based images to identify and distinguish blended sources in ground-based galaxy cluster images" Green Bay, WI
- Jul. 2025 **LSST-DESC Summer Conference** "Leveraging space-based images to identify and distinguish blended sources in ground-based galaxy cluster images" Champaign, IL

Teaching Experience

Undergraduate Teaching Assistant 2024, 2026
Milwaukee School of Engineering

- PHY 1110: Physics I – Mechanics and Thermodynamics
- CSC 1120: Data Structures and Graphical Interfaces

Professional Affiliations

2024- **Dark Energy Science Collaboration (LSST-DESC)**
2025- **American Physical Society**

Service

2026 **Panelist**, Executive Vice President of Academics Interview Committee, MSOE
2026 **Panelist**, Admitted Students Information Session, MSOE

Research Interests

- Statistical and computational analysis of large astronomical datasets (LSST, Roman)
- Machine learning applications in astronomy
- Weak gravitational lensing as a probe of cosmological parameters
- Time-domain astronomy with transients and variable stars

Technical Skills

Programming: Python, C, C++, Java, SQL

Scientific Libraries: NumPy, Pandas, Matplotlib, PyMC, scikit-learn

Astronomy Software: Astropy, Astroquery, DS9, SExtractor, BPZ, Scarlet, DeepDISC