PAUL M. CHICHURA

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EDUCATION

The University of Chicago   Chicago, IL
Ph.D. in Physics   *Aug. 2025*

University of Pennsylvania   Philadelphia, PA
M.S. in Physics and Astronomy   *May 2018*
B.A. in Physics; Mathematics minor – summa cum laude and department honors   *May 2018*

RESEARCH EXPERIENCE

NSF-Simons AI Institute for the Sky (SkAI)   Chicago, IL
Postdoctoral Scholar, University of Chicago, Department of Astronomy   *Sep. 2025 – Present*
- Developing reinforcement learning models to optimize telescope scheduling, trained on 6 years of data (~500k observations), and deploy on live systems to automate operations, boost efficiency, and reduce human labor
- Leading a 10-person interdisciplinary research group to organize team operations, coordinate computational resource allocation, and bridge communication between machine learning researchers and domain scientists

The University of Chicago   Chicago, IL
Graduate Researcher, Department of Physics   *Sep. 2019 – Aug. 2025*
- Designed, built, and deployed machine learning models to control telescopes: XGBoost models that forecast misalignment in real time, reducing errors pointing at the sky by 33%
- Built a pipeline to identify new signals in large (>600 TB) astronomical survey data, achieving first-of-its-kind detections of asteroids and publishing methods transferrable to prediction models for ~3 other telescopes
- Analyzed time-series data of a high-variance astrophysical signal to model its stochastic variability, creating a real-time instrument calibration pipeline to reduce systematic errors across ~16,000 detectors
- Developed unconventional data-engineering methods, such as integrating data across measurement systems and domains, designing novel observations, and repurposing underused archival datasets
- Piloted the Analysis Coordinator role for 100-person collaboration, organized and led weekly group meetings for local 20-person lab, and pioneered 3 annual climate surveys

University of Pennsylvania   Philadelphia, PA
Undergraduate Researcher, Department of Physics and Astronomy   *Jul. 2016 – May 2019*
- Translated mathematical models into code relied on by our 100-person collaboration to analyze the first data available from the experiment's commissioning run
- Discovered a source of instrumental noise by comparing data and simulations, leading to iterative improvements on data processing and analysis pipelines that removed noise contamination

AWARDS AND HONORS

- *Sugarman Award for Excellence in Graduate Student Research*, University of Chicago – 1-2 students yearly   *Apr. 2024*
- *Sachs Fellowship*, University of Chicago – summer support for top-performing graduate students   *Jun. 2021*
- *Phi Beta Kappa Honor Society*, University of Pennsylvania – recognizes top 10% of students   May *2018*

TECHNICAL SKILLS AND INTERESTS

- **Coding**: Python (NumPy, Pandas, SciPi, Matplotlib, Scikit-learn), Git, High-Throughput Computing (HTC)
- **Data analysis**: analytical models, time-series forecasting, machine learning, image processing, Fourier analysis
- **Interests**: DIY home renovation; South Pole deployment and logistics; a cappella singing