PAUL M. CHICHURA

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EDUCATION

The University of Chicago Chicago, IL

Ph.D. in Physics *Expected Aug. 2025*

- *Nathan Sugarman Award for Excellence in Graduate Student Research*, awarded to 1-2 graduating students, nominated "for creative and innovative research that has expanded the science [of the] South Pole Telescope"

University of Pennsylvania Philadelphia, PA

M.S. in Physics and Astronomy *May 2018*

B.A. in Physics; Mathematics minor *May 2018*

- Graduated *summa cum laude* with department honors
- Phi Beta Kappa Honor Society, recognizing the top 10% of students

RESEARCH EXPERIENCE

The University of Chicago Chicago, IL

Graduate Researcher, Department of Physics *Sep. 2019 – Present*

- 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%
- Analyzed time-varying events in large (>600 TB) astronomical survey data, achieving first-of-its-kind detections of asteroids and developing methods transferrable to prediction models for ~3 other telescopes
- Developed unconventional data-collection methods, such as designing novel telescope observations, creating real-time calibration methods, and repurposing archival data to solve disparate problems
- Directed ~6-person teams for telescope observations in remote locations (e.g. South Pole with limited connectivity), ensuring successful setup, deployment, and results delivered within strict deadlines

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

LEADERSHIP AND OUTREACH

Science Collaboration Outreach Program, Program Lead *Jul. 2020 – Present*

- Led collaboration's flagship outreach for Pre-K/K science education: launched professional development trainings for 30 teachers, led lessons in 4 local classrooms, spearheaded publishing 4 original lesson plans

Graduate Research Lab, Research Coordinator *Sep. 2021 – Present*

- Piloted the Analysis Coordinator role for 100-person collaboration; organized and led weekly group meetings for local 20-person lab; pioneered, conducted, and analyzed 3 annual climate surveys

Undergraduate Student Group, President and Executive Board Member *Sep. 2015 – May 2019*

- President of Disney A Cappella, grew membership by 45%, organized 6 biannual 150-attendee concerts

TECHNICAL SKILLS AND INTERESTS

- **Coding**: Python (numpy, pandas, scipy, matplotlib, scikit-learn), GitHub, HTC parallel computing
- **Data analysis**: analytical modeling, time series analysis, machine learning, image processing, Fourier analysis
- **Interests**: DIY home improvement including full room renovations; South Pole deployment and logistics