Ferdinand Ferdinand

fferdinand.com | ff10@illinois.edu | linkedin.com/in/ferdinandd

Education

University of Illinois at Urbana-Champaign (UIUC) Aug. 2023 - May 2027
Bachelor of Science in Astrophysics *Current GPA: 3.95/4.00*

Relevant Coursework: Observational Astronomy, Advanced Electromagnetism II, Quantum Physics I, Stellar Astrophysics, Nuclear and Particle Astrophysics, Foundations of Data Science in Astronomy

Research Experiences

Radio Variability Search in Poststarburst (PSB) Galaxies Jan. 2026 - Present
Mentor: Professor K. Decker French *UIUC*

- Measured flux densities of 5,040 PSB galaxies across VLASS Epochs 1–4.1 using 2D Gaussian fitting to search for long-term radio variability.
- Identified 26 radio variable candidates and investigated their variability mechanisms, including TDE or AGN nuclear acitivties

X-ray Supernova Analysis Pipeline (XSNAP) Jun. 2025 - Apr. 2026
Mentor: Dr. Wynn Jacobson-Gálan and Professor Mansi Kasliwal *California Institute of Technology*

- Developed XSNAP, an open-source Python pipeline for end-to-end X-ray supernova data reduction and spectral analysis for Chandra, XMM-Newton, Swift-XRT, and NuSTAR data; publicly available on Github and PyPI
- Applied XSNAP to SN 2024ggi and SN 2024iss, constraining circumstellar medium density profiles and progenitor star's mass-loss rates, resulting in one first-author publication and one collaborative paper

Membership Study of a Septuple Open Cluster System Aug. 2024 - Aug. 2025
Mentor: Dr. rer. nat. Mochamad Ikbal Arifyanto *Bandung Institute of Technology*

- Identified a septuple open cluster system candidate by applying agglomerative clustering to 200,000+ Gaia DR3 sources across multiple open clusters
- Derived each cluster parameters (extinction, age, metallicity, and distance modulus) via isochrone fitting

Search of New Variable Star Jan. 2024 - May. 2025
Mentor: Dr. Kirill Sokolovsky *UIUC*

- Benchmarked Variability Search Toolkit (VaST) transient search effectiveness via injection-recovery tests and measured recovery completeness as a function of source magnitude
- Visually inspected TICA TESS images at 12-hours cadence in search of novae and stellar flares, identifying five new UV type variables and registered them to the International Variable Star Index [Results]

Publications

1 First-author; 1 Nth-author; 2 Preprints (h-index: 1, citations: 2)
ORCID: 0009-0008-7581-3096

First-author:

1. *XSNAP: An X-ray Supernova Analysis Pipeline with Application to the Type II Supernova 2024ggi* [Citations: 1]. **Ferdinand**, W. V. Jacobson-Galán, et al. (2026) ApJ, 1001, 26 (ApJ)

Nth-author:

2. *TCP J07222683+6220548: A New AM CVn Type System with Infrequent Outbursts* [Citations: 1]. A. Tarasenkov, [et al. including **Ferdinand**]. (2025) RAA, 25, 075017 (RAA)

Preprints:

3. *Analysis of a Septuple Open Cluster System and Its Extended Family in Gaia DR3.* M. A. Husain, **Ferdinand**, M. I. Arifyanto, M. I. Hakim. (2026) arXiv, preprint arXiv:2604.23093 (arXiv)

4. *SN 2024iss: A Multi-Wavelength Exposé of a Type IIb Supernova with an Early-Time Ultraviolet Spectrum and Shock Breakout Constraints.* R. Yete, W. V. Jacobson-Galán, **Ferdinand**, et al. (2026) arXiv, preprint arXiv:2603.20375 (arXiv)

Awards & Fellowships

Summer Undergraduate Research Fellowship (Caltech SURF) Jun. 2026 - Aug. 2026

Summer Undergraduate Research Fellowship (Caltech SURF) Jun. 2025 - Aug. 2025

Dean's List: Fall 2023, Spring 2024, Fall 2024, & Spring 2025 2023 - 2025

American Association of Variable Star Observers (AAVSO) Observer Award Nov. 2024

International Olympiad on Astronomy and Astrophysics (IOAA): Bronze Medalist Aug. 2023

Indonesia Maju Scholarship Aug. 2023 - May 2027

Telescope Proposals

Accepted Programs as Co-Investigator

- **JWST Cycle 4 (DD), Proposal ID 9492**, "From Rags to Calcium-riches: Using JWST to Constrain Progenitor Identity and Dust Formation in the Calcium-strong Transient 2025coe" (2025)

Observing Experiences

Palomar 200-inch Hale Telescope Wide Field Infrared Camera (WIRC), 1 night

Research Talks

Presentations

- Caltech SURF, Aug. 2025

Posters

- American Astronomical Society 247 Meeting, Jan. 2026
- UIUC Undergraduate Research Symposium, Apr. 2025
- Illinois Astrofest, Apr. 2025
- Illinois Astrofest, Apr. 2024

Outreach, Teaching, & Organizational Activities

USA Astronomy and Astrophysics Organization Nov. 2024 - Present

President, Coach, & Problem Setter *Remote*

- Directing the national selection process for the USA team to the 2026 IOAA, organizing and overseeing three selection rounds with a total of 400+ participants.
- Designed and reviewed examination problems for the 2025 and 2026 selection processes; coached members of the 2025 USA IOAA team in stellar structure and evolution

Department of Astronomy Aug. 2024 - May 2026

Grader & Tutor *Urbana, IL*

- Graded assignments for 100+ students in ASTR210 (Introduction to Astrophysics) and ASTR405 (Planetary Systems); conducted weekly two-hour tutoring sessions in introductory astrophysics

Physics Outreach and Instruction through New Technologies (POINT) VR Sep. 2023 - May 2026

Outreach & Media Coordinator *Urbana, IL*

- Established partnerships with local schools and community events to expand outreach opportunities for the POINT VR program
- Delivered interactive virtual-reality demonstrations of general relativity and astronomy concepts to 150+ participants across the Champaign–Urbana community

Indonesia Astronomy Olympiads Dec. 2021 - Present

Mentor & Tutor *Remote*

- Designed 50+ problem sets and delivered 100+ hours of lectures on advanced astrophysics topics to 100+ students across Indonesia
- Coached 20+ students; mentees achieved 1 IOAA Bronze Medal, 1 National Gold, 1 National Silver, and 2 National Bronze medals

Technical Skills

Language: Python, Bash, SQL, HTML, LaTeX

Python Libraries: pandas, NumPy, Matplotlib, Seaborn, Astropy, SciPy

Astronomy Softwares: DS9, CASA, CARTA, Aladin, CIGALE, VaST, ASteCA