Serena A. Cronin

PhD Candidate, Astronomy | University of Maryland, College Park | cronin@umd.edu | serenacronin.github.io
ORCID: 0000-0002-9511-1330 | UAT: Galaxy evolution (594), Galaxy winds (626), Starburst galaxies (1570)

EDUCATION

University of Maryland — College Park, MD
Ph.D. Astronomy — Expected May 2027
M.S. Astronomy — May 2023

The Ohio State University — Columbus, OH
B.S. Astronomy and Astrophysics — Aug. 2016 – Dec. 2020
Cum Laude with Research Distinction

RESEARCH EXPERIENCE

Graduate Research Assistant, University of Maryland — Aug. 2021 –
Dissertation: A Tale of Two Starbursts: The Multiphase Galactic Winds of M82 and NGC 253
Advisor: Prof. Alberto Bolatto

National Radio Astronomy Observatory Intern — May 2020 – Aug. 2021
*Project: Molecular Gas Toward the Supermassive Black Hole Sgr A**
Advisors: Drs. Juergen Ott, David Meier, and Brian Svoboda

Undergraduate Research Assistant, Ohio State University — Aug. 2018 – Aug. 2021
Thesis: Local Environments of Low-Redshift Supernovae
Advisors: Prof. Adam Leroy, Dr. Dyas Utomo

SELECTED OBSERVING

*I have led the design, proposal, and execution of **four PI observing programs** using the JWST, VLA, and ALMA, totaling 130 hours of awarded time, in addition to a substantial primary-observer role for the GBT.*

JWST

PI – Cycle 5, **9 hr**, NIRSpec MSA — ID: 10482
Crushing It: Tracking the Survival of Cool Clouds on Cloud-Crushing and Dynamical Timescales in the M82 Outflow

VLA

PI – Semester 26A, Rank A, **87 hr** — ID: 26A-453
Saying 'HI' to the Deepest View of M82's HI Halo

ALMA

PI – Cycle 12, Rank C, **27 hr** — ID: 2025.1.00928.S
Five Golden Rings: Super Star Cluster Formation in the Nuclear Rings of Five Nearby Galaxies

PI – Cycle 11, Rank A, **7 hr** — ID: 2024.1.00917.S
DUVET-Keck: A Sub-kpc View of Star Formation Regulation Across Local Starbursting Disks

GBT

Co-I – 2022–2025, PI: Alberto Bolatto — ID: 21B-024
GBT EDGE: A Representative Survey of the z=0 Universe with Full IFU Spectroscopy

- Primary Observer: 48.5 hours
- Designed observations: 123.5 hours

GRANTS & AWARDS

- JWST-GO-10482, JWST/STScI/NASA – $123,512 2026
- Andrew S. Wilson Prize for Excellence in Research, Dept. of Astronomy, UMD – $500 2026
- Department Service Prize, Dept. of Astronomy, UMD – $500 2023
- Philip E. Angerhofer Outstanding Teaching Assistant Award, UMD – $250 2022
- AAS 238 Chambliss Astronomy Achievement Student Award – Honorable Mention 2021
- AAS 237 Chambliss Astronomy Achievement Student Award – Honorable Mention 2021
- Undergraduate Research Grant, Ohio State – $1,500 2019
- Astronomy Undergraduate Scholarship, Ohio State – $1,000 2019

MENTORING, LEADERSHIP, & SERVICE

Research Mentoring

Primary research mentor to six students, leading to a co-authored publication and a mentee now pursuing a Ph.D.

Joshua Rickford	2026-	University of Maryland
Alanis Alvarado	Summer 2025	GRAD-MAP Summer Scholars
Angel Rodriguez-Barbosa	Summer 2024	University of Maryland
Rhiannon Paterson	Summer 2024	GRAD-MAP Summer Scholars
Tanya Bait	2023−2024, 2026-	UMD Honors Thesis, STEM Magnet Program
Lenin Nolasco*	Summer 2023	GRAD-MAP Summer Scholars

*Co-author, Cronin et al. 2025, ApJ, 987, 92

Selected Committee & Service Roles

- **Referee** – The Astrophysical Journal (ApJ)
- **American Astronomical Society SGMA Committee** (2024–present)
- **Workshops on Applying to Astronomy Graduate School**, Founder & Organizer (2023–2025)

SELECTED INVITED & CONTRIBUTED TALKS

Low Density Universe, STScI	Dust Processing in the M82 Wind with JWST	April 2026
UKansas Astronomy Seminar	Dust Processing in the M82 Wind with JWST	Mar. 2026
Dusty Universe: 5th Pan-Dust Conf.	Dust Survival in the M82 Wind with JWST	Nov. 2025
Board of Visitors Meeting, UMD	Tracing Cold Material in Hot Galactic Winds with JWST	Oct. 2025
Galaxy Journal Club, STScI	Ionized Gas Measurements of the NGC 253 Superwind	Feb. 2025
JWST Weekly Briefing, STScI	Dust Processing in the Iconic M82 Wind with JWST	Jan. 2025

TEACHING

- **Teaching Assistant**, ASTR 100: Introduction to Astronomy, Univ. of Maryland Fall 2021 – Spring 2022
- **Course Development**, ASTRON 1101: From Planets to the Cosmos, Ohio State Spring 2021
- **Teaching Assistant**, ASTRON 1101: From Planets to the Cosmos, Ohio State Spring 2017 – Fall 2020

SKILLS & PROFESSIONAL DEVELOPMENT

Programming Languages	Python, C++
Technical Skills	CASA, Linux, LaTeX, Wolfram Language, HTML
Workshops	ALMA Data Reduction Workshop (2024); Green Bank Single Dish Summer School (2024); JSI Workshop on Winds throughout the Universe (2023); Green Bank Observatory Remote Observer Training (2022); NRAO 18th Synthesis Imaging Workshop (2022)

PUBLICATIONS

Total: 19 papers — 229 citations — h-index = 10 — SciX Library
First-authored: 4 papers — 28 citations

First Author

4. *JWST Observations of Starbursts: Polycyclic Aromatic Hydrocarbons in the NGC 253 Superwind*
Cronin, Serena A., Bolatto, Alberto D., Levy, Rebecca C., Gordon, Karl D., et al., 2026, arXiv:2611.23367

3. *JWST Observations of Starbursts: Dust Processing in the M82 Superwind*
Cronin, Serena A., Bolatto, Alberto D., Richie, Helena M., Donnelly, Grant P., et al., 2026, ApJ, 1002, 217

2. *Physical Conditions of the Ionized Superwind in NGC 253 with VLT/MUSE*
Cronin, Serena A., Bolatto, Alberto D., Congiu, Enrico, Donaghue, Keaton, et al., 2025, ApJ, 987, 92

1. *Local Environments of Low-redshift Supernovae*
Cronin, Serena A., Utomo, Dyas, Leroy, Adam K., Behrens, Erica A., et al., 2021, ApJ, 923, 86

Significant Contributions

3. *The EDGE-CALIFA Survey: Star Formation Efficiency and Galaxy Quenching across 62 Main-sequence, Green Valley, and Red Galaxies*
Teng, Yu-Hsuan, Bolatto, Alberto D., Teuben, Peter J., Rosolowsky, Erik, et al. (**incl. S. A. Cronin**), 2026, ApJ, 1007, 59

2. *JWST Observations of Starbursts: Polycyclic Aromatic Hydrocarbons Closely Trace the Cool Phase of M82's Galactic Wind*
Lopez, Sebastian, Ring, Colton, Leroy, Adam K., **Cronin, Serena A.**, et al., 2026, ApJL, 999, L7

1. *JWST Observations of Starbursts: Polycyclic Aromatic Hydrocarbon Emission at the Base of the M82 Galactic Wind*
Bolatto, Alberto D., Levy, Rebecca C., Tarantino, Elizabeth, Boyer, Martha L., et al. (**incl. S. A. Cronin**), 2024, ApJ, 967, 63

Contributing Author

12. *JWST Observations of Starbursts: The Motion of Dust-PAH Kinematics of M82 and NGC 253 with JWST/MIRI Spectroscopy*
Donnan, Fergus R., Sandstrom, Karin, Bolatto, Alberto D., Draine, Bruce T., et al. (**incl. S. A. Cronin**), 2026, AJ, 172, 260

11. *JWST Observations of Starbursts: A Young Bubble in NGC 253's Central Starburst*
Sheriff, Kaitlyn E., Mills, Elisabeth A. C., Mai, Xinyu, Siwakoti, Utsav, et al. (**incl. S. A. Cronin**), 2026, AJ, 172, 261

10. *JWST Observations of Starbursts: Molecular Hydrogen Excitation and Disequilibrium in M82*
Duval, Sara E., Smith, J. D. T., Bolatto, Alberto D., Draine, B. T., et al. (**incl. S. A. Cronin**), 2026, ApJ, 1005, 56

9. *Building a culture of inclusion and allyship for queer astronomers*
Brumback, McKinley, Calahan, Jenny, Cox, Isa, **Cronin, Serena**, et al., 2026, NatAs, 10, 764

8. *JWST Observations of Starbursts: Relations between PAH features and CO clouds in the starburst galaxy M 82 (Corrigendum)*
Villanueva, V., Bolatto, A. D., Herrera-Camus, R., Leroy, A., et al. (**incl. S. A. Cronin**), 2025, A&A, 702, C2

7. *The MUSE view of the Sculptor galaxy: Survey overview and the luminosity function of planetary nebulae*
Congiu, E., Scheuermann, F., Kreckel, K., Leroy, A., et al. (**incl. S. A. Cronin**), 2025, A&A, 700, A125

6. *The Karl G. Jansky Very Large Array Local Group L-Band Survey (LGLBS)*
   Koch, Eric W., Leroy, Adam K., Rosolowsky, Erik W., Chomiuk, Laura, et al. (**incl. S. A. Cronin**), 2025, ApJS, 279, 35

5. *The dust polarisation and magnetic field structure in the centre of NGC253 with ALMA*
   Belfiori, Davide, Paladino, Rosita, Hughes, Annie, Bernard, Jean-Philippe, et al. (**incl. S. A. Cronin**), 2025, A&A, 697, A24

4. *JWST observations of starbursts: cold clouds and plumes launching in the M 82 outflow*
   Fisher, Deanne B., Bolatto, Alberto D., Chisholm, John, Fielding, Drummond, et al. (**incl. S. A. Cronin**), 2025, MNRAS, 538, 3068

3. *JWST Observations of Starbursts: Relations between PAH features and CO clouds in the starburst galaxy M 82*
   Villanueva, V., Bolatto, A. D., Herrera-Camus, R., Leroy, A., et al. (**incl. S. A. Cronin**), 2025, A&A, 695, A202

2. *JWST Observations of Starbursts: Massive Star Clusters in the Central Starburst of M82*
   Levy, Rebecca C., Bolatto, Alberto D., Mayya, Divakara, Cuevas-Otahola, Bolivia, et al. (**incl. S. A. Cronin**), 2024, ApJL, 973, L55

1. *The EDGE-CALIFA Survey: Molecular Gas and Star Formation Activity across the Green Valley*
   Villanueva, Vicente, Bolatto, Alberto D., Vogel, Stuart N., Wong, Tony, et al. (**incl. S. A. Cronin**), 2024, ApJ, 962, 88