

Serena A. Cronin

PhD Candidate, Astronomy | University of Maryland, College Park
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EDUCATION

University of Maryland

Ph.D. Astronomy

M.S. Astronomy

Advisor: Prof. Alberto Bolatto

College Park, MD

Expected 2027

May 2023

The Ohio State University

B.S. Astronomy and Astrophysics

Cum Laude with Research Distinction

Advisor: Prof. Adam Leroy

Columbus, OH

Aug. 2016 – Dec. 2020

RESEARCH EXPERIENCE

Graduate Research Assistant, University of Maryland

Dissertation: A Tale of Two Starbursts: Star Formation Regulation in the Archetypal Starburst Galaxies M82 and NGC 253

Advisor: Prof. Alberto Bolatto

Aug. 2021 – May 2027

National Radio Astronomy Observatory Intern

*Project: Molecular Gas Toward the Supermassive Black Hole Sgr A**

Advisors: Drs. Juergen Ott, David Meier, and Brian Svoboda

May 2020 – Aug. 2021

Undergraduate Research Assistant, Ohio State University

Thesis: Local Environments of Low-Redshift Supernovae

Advisors: Dr. Dyas Utomo and Prof. Adam Leroy

Aug. 2018 – Aug. 2021

FIRST-AUTHOR PUBLICATIONS

3. *JWST Observations of Starbursts: Dust Processing in the M82 Superwind*
Cronin, Serena A., et al. The Astrophysical Journal, 2026
2. *Physical Conditions of the Ionized Superwind in NGC 253 with VLT/MUSE*
Cronin, Serena A., et al. The Astrophysical Journal, 2025
1. *Local Environments of Low-redshift Supernovae*
Cronin, Serena A., et al. The Astrophysical Journal, 2021

SELECTED OBSERVING

*I have led the design, proposal, and execution of **four PI observing programs** using the JWST, VLA, and ALMA, totaling over 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

ALMAPI – 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

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
• 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 Scholarship, Ohio State – \$1,500	2019
• Astronomy Undergraduate Scholarship, Ohio State – \$1,000	2019

LEADERSHIP, MENTORING & SERVICE**Research Mentoring**

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; Mercyhurst Univ. <i>Currently: PhD Student, UMD</i>
Tanya Bait	2023–2024, 2026–	STEM Magnet Program, Poolesville HS, MD <i>Currently: Undergrad, UMD</i>
Lenin Nolasco	Summer 2023	GRAD-MAP Summer Scholars; Stony Brook Univ.

Committee & Executive Roles

- **Referee** – The Astrophysical Journal (ApJ)
- **NASA ROSES Executive Secretary** (April 2025)
- **AAS SGMA Committee**, Sexual-Orientation and Gender Minorities in Astronomy (2024–present)
- **Community and Belonging Committee**, UMD (2022–2024)

Founder & Program Leadership

- **Workshops on Applying to Astronomy Graduate School**, Founder & Organizer (2023–2025)
Built and lead a UMD-based workshop series teaching undergraduates the graduate-school application process, including CV and essay workshops.
- **Astronomy and Physics Pride Alliance**, Founder, President & Organizer (2022–2026)
Founded and lead a community-building group for students in physics and astronomy at UMD.

Additional Outreach & Service

- **Total Solar Eclipse Outreach Event**, Cleveland, OH (Apr. 2024) – organized & led solar observing and demos for all ages
- **Python Bootcamp Lead**, GRAD-MAP Winter Workshop, UMD (Jan. 2024)

- **Graduate Peer Mentoring Program**, UMD (2022–2023)
- **Maryland Day Volunteer**, UMD (Apr. 2022, 2024, 2025) – solar observing, spectroscopy demos

PRESENTATIONS

★ indicates an invited talk.

Exploring the Aromatic Universe in the Era of JWST (Talk)	PAH Survival in the M82 Superwind with JWST	July 2026
Univ. of Kansas Astro. & Space Physics Seminar (Talk)	Dust Processing in the M82 Wind with JWST MIRI and NIRCam	Mar. 2026
Dusty Universe: 5th Pan-Dust Conf. (Talk)	Dust Survival in the M82 Wind with JWST MIRI and NIRCam	Nov. 2025
★ CMNS Board of Visitors Meeting (Invited Talk)	Surviving the Storm: Tracing Cold Material in Hot Galactic Winds with JWST	Oct. 2025
Star Formation, Stellar Feedback, and the Ecology of Galaxies (Poster)	Dust Processing in the M82 Superwind with JWST MIRI and NIRCam	May 2025
★ Galaxy Journal Club, STScI (Invited Talk)	Ionized Gas Measurements of the NGC 253 Superwind with VLT/MUSE	Feb. 2025
★ JWST Weekly Briefing, STScI (Invited Talk)	Dust Processing in the Iconic M82 Wind with JWST MIRI and NIRCam	Jan. 2025
AAS 245 (Talk)	Dust Processing in the Iconic M82 Wind with JWST MIRI and NIRCam	Jan. 2025
Univ. of Kansas Astro. & Space Physics Seminar (Talk)	Ionized Gas Measurements of the NGC 253 Superwind with VLT/MUSE	Nov. 2024
Green Bank Observatory (Poster)	Observations of the Ionized NGC 253 Wind with VLT/MUSE	June 2024
AAS 238 (Poster)	Molecular Gas Toward the Supermassive Black Hole Sgr A*	June 2021
AAS 237 (Poster)	The Local Environments of Low-Redshift Supernovae	Jan. 2021
NRAO Summer Student Symposium (Talk)	What Surrounds the Supermassive Black Hole Sgr A*?	Aug. 2020
Denman Undergraduate Research Forum (Poster)	The Local Environments of Low-Redshift Supernovae	Mar. 2020
APS Conf. for Undergrad. Women in Physics (Poster)	The Local Environments of Low-Redshift Supernovae	Jan. 2020
Summer Undergrad. Research Program Symposium (Talk)	The Local Environments of Low-Redshift Supernovae	July 2019

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, Cloudy, Linux, L ^A T _E X, Wolfram Language (Mathematica)
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)

PRESS & MEDIA

- Featured in “GRAD-MAP Students, Mentors Learn From Each Other” August 2025
- Featured in “Studying Dust in the Wind” June 2025

- Quoted in [NASA press release](#): “NASA’s James Webb Space Telescope Captures Images of Galaxy M82’s Glowing Core and Galactic Wind” April 2024

FULL REFEREED PUBLICATION LIST

Total: 15 papers — 171 citations — h-index = 8 — ADS Library

First-authored: 3 papers — 20 citations

15. *JWST Observations of Starbursts: Molecular Hydrogen Excitation and Disequilibrium in M82*
Duval, Sara E., Smith, J. D. T., Bolatto, Alberto D., Draine, B. T., Lai, Thomas S.-Y., Sandstrom, Karin M., Glover, Simon C. O., Klessen, Ralf S., Mills, Elisabeth A. C., Levy, Rebecca C., Veilleux, Sylvain, Dale, Daniel A., Togi, Aditya, van der Werf, Paul P., Villanueva, Vicente, Siwakoti, Utsav, **Cronin, Serena A.**, Skillman, Evan D., Fisher, Deanne B., Teng, Yu-Hsuan, Meier, David S., Boogaard, Leindert A., Tarantino, Elizabeth, Lenkić, Laura, Herrera-Camus, Rodrigo, Walter, Fabian, Arens, Patricia A., *The Astrophysical Journal*, 2026
14. *Building a culture of inclusion and allyship for queer astronomers*
Brumback, McKinley, Calahan, Jenny, Cox, Isa, **Cronin, Serena**, Fan, Pinchen, Ghosh-Coutinho, Ishan F., Kilmarrin, Iver Warburton, Mao, Yao-Yuan, Olsen, Charlotte, Vrijmoet, Eliot Halley, *Nature Astronomy*, 2026
13. *JWST Observations of Starbursts: Dust Processing in the M82 Superwind*
Cronin, Serena A., Bolatto, Alberto D., Richie, Helena M., Donnelly, Grant P., Levy, Rebecca C., Gordon, Karl D., Tarantino, Elizabeth, Boyer, Martha L., Armus, Lee, Arens, Patricia A., Boogaard, Leindert A., Dale, Daniel A., Donaghue, Keaton, Draine, Bruce T., Duval, Sara E., Emig, Kimberly, Fisher, Deanne B., Glover, Simon C. O., Hensley, Brandon S., Herrera-Camus, Rodrigo, Klessen, Ralf S., Lai, Thomas S.-Y., Lenkić, Laura, Leroy, Adam K., Lieber, Ashley E., De Looze, Ilse, Lopez, Sebastian, Meier, David S., Mills, Elisabeth A. C., Sandstrom, Karin M., Schneider, Evan, Sheriff, Kaitlyn E., Siwakoti, Utsav, Skillman, Evan D., Smith, J. D. T., Teng, Yu-Hsuan, Thompson, Todd A., Tielens, Alexander G. G. M., Veilleux, Sylvain, Villanueva, Vicente, Walter, Fabian, van der Werf, Paul P., *The Astrophysical Journal*, 2026
12. *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.**, Bolatto, Alberto D., Lopez, Laura A., Villanueva, Vicente, Fisher, Deanne B., Thompson, Todd A., Donnelly, Grant P., Armus, Lee, Böker, Torsten, Boogaard, Leindert A., Boyer, Martha L., Chown, Ryan, Dale, Daniel A., Donaghue, Keaton, Emig, Kimberly, Glover, Simon C. O., Herrera-Camus, Rodrigo, Klessen, Ralf S., Lai, Thomas S.-Y., Lenkić, Laura, Levy, Rebecca C., Meier, David S., Mills, Elisabeth, Ott, Juergen, Skillman, Evan D., Smith, J. D. T., Tarantino, Elizabeth J., Veilleux, Sylvain, Walter, Fabian, van der Werf, Paul P., *The Astrophysical Journal*, 2026
11. *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., Fisher, D. B., Levy, R. C., Böker, T., Boogaard, L., **Cronin, S. A.**, Dale, D. A., Emig, K., De Looze, I., Donnelly, G. P., Lai, T. S.-Y., Lenkić, L., Lopez, L. A., Lopez, S., Meier, D. S., Ott, J., Relano, M., Smith, J. D., Tarantino, E., Veilleux, S., Walter, F., van der Werf, P., *Astronomy and Astrophysics*, 2025
10. *The MUSE view of the Sculptor galaxy: Survey overview and the luminosity function of planetary nebulae*
Congiu, E., Scheuermann, F., Kreckel, K., Leroy, A., Emsellem, E., Belfiore, F., Hartke, J., Anand, G., Egorov, O. V., Groves, B., Kravtsov, T., Thilker, D., Tovo, C., Bigiel, F., Blanc, G. A., Bolatto, A. D., **Cronin, S. A.**, Dale, D. A., McClain, R., Méndez-Delgado, J. E., Oakes, E. K., Klessen, R. S., Schinnerer, E., Williams, T. G., *Astronomy and Astrophysics*, 2025
9. *The Karl G. Jansky Very Large Array Local Group L-Band Survey (LGLBS)*
Koch, Eric W., Leroy, Adam K., Rosolowsky, Erik W., Chomiuk, Laura, Dalcanton, Julianne J., Pingel, Nickolas M., Sarbadhicary, Sumit K., Stanimirović, Snežana, Walter, Fabian, Archer, Haylee N., Bolatto, Alberto D., Busch, Michael P., Chen, Hongxing, Chown, Ryan, Corbould, Harris, **Cronin, Serena A.**, Darling, Jeremy, Do, Thomas, Meyer, Jennifer Donovan, Eibensteiner, Cosima, Hunter, Deidre, Indebetouw, Rémy, Jagannathan, Preshanth, Kepley, Amanda A., Kim, Chang-Goo, Kim, Shin-Jeong, Kovacs, Timea O.,

- Marvil, Joshua, Murphy, Eric J., Murray, Claire E., Ott, Jürgen, Pisano, D. J., Putman, Mary, Rybarczyk, Daniel R., Roman-Duval, Julia, Sandstrom, Karin, Schinnerer, Eva, Skillman, Evan D., Smercina, Adam, Stelea, Ioana, Strader, Jay, Sun, Jiayi, Tallapaneni, Devisree, Tarantino, Elizabeth, Villanueva, Vicente, Weisz, Daniel R., Williams, Thomas G., Wong, Tony, *The Astrophysical Journal Supplement Series*, 2025
8. *Physical Conditions of the Ionized Superwind in NGC 253 with VLT/MUSE*
Cronin, Serena A., Bolatto, Alberto D., Congiu, Enrico, Donaghue, Keaton, Kreckel, Kathryn, Leroy, Adam K., Levy, Rebecca C., Veilleux, Sylvain, Walter, Fabian, Nolasco, Lenin, *The Astrophysical Journal*, 2025
 7. *The dust polarisation and magnetic field structure in the centre of NGC253 with ALMA*
Belfiori, Davide, Paladino, Rosita, Hughes, Annie, Bernard, Jean-Philippe, Alina, Dana, Bešlić, Ivana, Lopez Rodriguez, Enrique, Gorski, Mark D., **Cronin, Serena A.**, Bolatto, Alberto D., *Astronomy and Astrophysics*, 2025
 6. *JWST observations of starbursts: cold clouds and plumes launching in the M 82 outflow*
Fisher, Deanne B., Bolatto, Alberto D., Chisholm, John, Fielding, Drummond, Levy, Rebecca C., Tarantino, Elizabeth, Boyer, Martha L., **Cronin, Serena A.**, Lopez, Laura A., Smith, J. D., Berg, Danielle A., Lopez, Sebastian, Veilleux, Sylvain, van der Werf, Paul P., Böker, Torsten, Boogaard, Leindert A., Lenkić, Laura, Glover, Simon C. O., Villanueva, Vicente, Mayya, Divakara, Lai, Thomas S.-Y., Dale, Daniel A., Emig, Kimberly L., Walter, Fabian, Relaño, Monica, De Looze, Ilse, Mills, Elisabeth A. C., Leroy, Adam K., Meier, David S., Herrera-Camus, Rodrigo, Klessen, Ralf S., *Monthly Notices of the Royal Astronomical Society*, 2025
 5. *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., Fisher, D. B., Levy, R. C., Böker, T., Boogaard, L., **Cronin, S. A.**, Dale, D. A., Emig, K., De Looze, I., Donnelly, G. P., Lai, T. S.-Y., Lenkić, L., Lopez, L. A., Lopez, S., Meier, D. S., Ott, J., Relano, M., Smith, J. D., Tarantino, E., Veilleux, S., Walter, F., van der Werf, P., *Astronomy and Astrophysics*, 2025
 4. *JWST Observations of Starbursts: Massive Star Clusters in the Central Starburst of M82*
Levy, Rebecca C., Bolatto, Alberto D., Mayya, Divakara, Cuevas-Otahola, Bolivia, Tarantino, Elizabeth, Boyer, Martha L., Boogaard, Leindert A., Böker, Torsten, **Cronin, Serena A.**, Dale, Daniel A., Donaghue, Keaton, Emig, Kimberly L., Fisher, Deanne B., Glover, Simon C. O., Herrera-Camus, Rodrigo, Jiménez-Donaire, María J., Klessen, Ralf S., Lenkić, Laura, Leroy, Adam K., De Looze, Ilse, Meier, David S., Mills, Elisabeth A. C., Ott, Juergen, Relaño, Mónica, Veilleux, Sylvain, Villanueva, Vicente, Walter, Fabian, van der Werf, Paul P., *The Astrophysical Journal*, 2024
 3. *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., Fisher, Deanne B., **Cronin, Serena A.**, Leroy, Adam K., Klessen, Ralf S., Smith, J. D., Berg, Danielle A., Böker, Torsten, Boogaard, Leindert A., Ostriker, Eve C., Thompson, Todd A., Ott, Juergen, Lenkić, Laura, Lopez, Laura A., Dale, Daniel A., Veilleux, Sylvain, van der Werf, Paul P., Glover, Simon C. O., Sandstrom, Karin M., Skillman, Evan D., Chisholm, John, Villanueva, Vicente, Lai, Thomas S.-Y., Lopez, Sebastian, Mills, Elisabeth A. C., Emig, Kimberly L., Armus, Lee, Mayya, Divakara, Meier, David S., De Looze, Ilse, Herrera-Camus, Rodrigo, Walter, Fabian, Relaño, Mónica, Koziol, Hannah B., Marvil, Joshua, Jiménez-Donaire, María J., Martini, Paul, *The Astrophysical Journal*, 2024
 2. *The EDGE-CALIFA Survey: Molecular Gas and Star Formation Activity across the Green Valley*
Villanueva, Vicente, Bolatto, Alberto D., Vogel, Stuart N., Wong, Tony, Leroy, Adam K., Sánchez, Sebastian F., Levy, Rebecca C., Rosolowsky, Erik, Colombo, Dario, Kalinova, Veselina, **Cronin, Serena**, Teuben, Peter, Rubio, Mónica, Bazzi, Zein, *The Astrophysical Journal*, 2024
 1. *Local Environments of Low-redshift Supernovae*
Cronin, Serena A., Utomo, Dyas, Leroy, Adam K., Behrens, Erica A., Chastenet, Jérémy, Holland-Ashford, Tyler, Koch, Eric W., Lopez, Laura A., Sandstrom, Karin M., Williams, Thomas G., *The Astrophysical Journal*, 2021