

DEVONTAE C. BAXTER

The University of California, San Diego - Department of Astronomy & Astrophysics

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RESEARCH IDENTITY

Galaxy Evolution and the Cosmic Web:

- Performing spectroscopic surveys to connect galaxies with their local and large-scale cosmic web environments;
- Measuring the relationship between galaxy quenching and environment using multi-wavelength imaging and spectroscopy.

Computational Astrophysics and Astronomical Data Science:

- Integrating observations with simulations to isolate the physics driving environmental quenching across cosmic time;
- Developing machine learning models to establish predictions for next-generation extragalactic surveys;
- Modeling the formation and evolution of rare extragalactic objects (e.g., galaxy protoclusters & isolated quenched dwarfs).

Collaborations:

- Charting Cluster Construction with VUDS and ORELSE (C3VO);
- Gemini Observations of Galaxies in Rich Early ENvironments (GOGREEN).

Unified Astronomy Thesaurus Keywords: Galaxy evolution, Galaxy quenching, High-redshift galaxy clusters.

EMPLOYMENT

NSF Astronomy & Astrophysics Postdoctoral Fellow at UC San Diego

July 2023 - present

Mentor: Alison L. Coil

EDUCATION

The University of California, Irvine

May 2023

Doctorate of Philosophy (Ph.D.) in Physics / Advisor: Michael C. Cooper

Irvine, CA

Thesis title: “When Galaxies Go Quiet: Elucidating the Drivers of Environmental Quenching Across Cosmic Time”

Georgia Institute of Technology

May 2017

Bachelor of Science (B.S.) in Physics with highest honors / Advisor: Alberto Fernandez-Nieves

Atlanta, GA

FUNDING & AWARDS

Summary: Total funding awarded (accepted and declined) **\$717,850**

Prize Fellowships

National Science Foundation – *Constraining the Cosmic Evolution of Environmental Quenching & Predicting Protocluster Populations* (**\$330,000**, Award# 2303800, PI: D. C. Baxter)

The University of California Chancellor’s Postdoctoral Fellowship Program - *Constraining the Cosmic Evolution of Environmental Quenching* (**\$9,850**)

Sullivan Prize Postdoctoral Fellowship (**\$240,000**, Declined)

Grants

National Science Foundation – *23rd Annual Symposium of the NSF Astronomy and Astrophysics Postdoctoral Fellows* (**\$50,000**, Award# 2437597, PI: J. Moreno, co-PI: D. C. Baxter)

Other Honors & Awards

Honorable Mention: UC Irvine President’s Dissertation Year Fellowship (**\$1,000**) 2022

AAS National Osterbrock Leadership Program Fellowship 2020-2023

UCI Physics & Astronomy Graduate Student Mentor Award 2020-2023

LSSTC Data Science Fellowship 2019-2022

Honorable Mention: Ford Foundation Predoctoral Fellowship 2019

UCI Eugene Cota-Robles Graduate Fellowship (**\$67,000**) 2017-2023

Tulsa Community Foundation: AMC Cares Scholarship (**\$5,000**) 2015-2017

Georgia Hope Scholarship (**\$15,000**) 2015-2017

PUBLICATION STATISTICS (FULL LIST ATTACHED AT THE END)

Peer-reviewed papers: **16** total (**5** first-author, **11** contributing author)

Citations: **180+** total, h-index=**7**

TEACHING EXPERIENCE

Summary: Taught **6** courses (**1** Instructor of Record, **3** Teaching Assistant, **2** Guest Lecturer) and **10** workshops.

Instructor of Record

ASTR 20A (Introduction to Astrophysics I) at UC San Diego

Fall 2025

Teaching Assistant

Physics 20E (Life in the Universe) at UC Irvine

Spring 2019

Physics 20B (Cosmology) at UC Irvine

Winter 2019

Physics 20D (Space Science) at UC Irvine

Fall 2018

Guest Lecturer

ASTR 2 (Galaxies and the Universe) at UC San Diego

May 2025

Physics 138 (Astrophysics of Galaxies) at UC Irvine

Nov 2020

Workshops & Bootcamps

STARTastro Python Workshop at UC San Diego

2024-present

Computational Astrophysics Research Preparation (CARP) Python Workshop at UC San Diego

2024-present

Computational Research Access NETwork (CRANE) Astronomy Data Analysis Workshop

2023-present

UC Carpentries Fall Workshop Series at UC San Diego

Sep 2023

LSSTC Data Science Fellowship Program Workshop at University of Washington

June 2023

Physics Olympiad Bootcamp at Ardent Academy

Dec 2019

Training & Certificates

Instructor Certification from *The Carpentries*

2024

The Carpentries is an international organization that teaches coding and data science skills through hands-on workshops. This certificate **recognizes the completion of pedagogical training to teach these skills to a global population of learners.**

Certification in Course Design

2020

This certificate from UCI Division of Teaching Excellence and Innovation **recognizes the completion of training to design effective, inclusive, and engaging courses.**

Certification for the Integration of Research, Teaching and Learning

2020

This certificate from UCI Division of Teaching Excellence and Innovation **recognizes the completion of training to integrate evidence-based teaching practices to enhance student outcomes.**

Mentoring Excellence Program Certification

2019

This certificate from UCI Graduate Division **demonstrates acquisition of mentoring skills, such as cultural competence and inclusivity, effective communication, navigating power dynamics, and conflict mediation.**

PRESENTATIONS

Summary: **28** presentations (**16** invited, **12** contributed) / †=invited; *=contributed

Colloquia/Seminars

UC San Diego Community and Science Advancements in Spanish (CaSAS) Seminar†

Sep 2025

Caltech Tea Talk†

May 2025

University of Wisconsin-Madison Science Seminar†

April 2025

UC Irvine Astronomy Seminar†

April 2025

UC Riverside Astronomy Seminar†

April 2025

UC San Diego Simulations TheoRy AND more (STRAND) Meeting†

March 2025

Washington State University Physics & Astronomy Colloquium† [video]

Nov 2024

University of Florida Astronomy Colloquium†

Nov 2024

UC Davis Cosmology and Astronomy Seminar†

Oct 2024

Georgia Institute of Technology Center for Relativistic Astrophysics Seminar†

Nov 2023

UC San Diego Astronomy Colloquium†

Oct 2023

University of Kansas Astronomy Seminar†

April 2022

The Ohio State University Little Galaxies Journal Club†

March 2021

Conferences/Workshops

Galaxy Formation & Evolution in Southern California 2025*	San Diego, CA	Sep 2025
The Baryon Cycle in the Cosmic Web*	Bern, Switzerland	Sep 2025
Tracing Cosmic Evolution with Galaxy Clusters V*	Sesto, Italy	July 2025
President's Postdoctoral Fellowship Program Academic Spring Retreat*	Lake Arrowhead, CA	April 2025
Conference for Emerging Black Academics in STEM*	Pasadena, CA	April 2025
Ensenada San Diego Astrophysical Society Meeting*	Ensenada, Mexico	Sep 2024
Galaxy Formation & Evolution in Southern California 2024*	Pasadena, CA	Sep 2024
President's Postdoctoral Fellowship Program Academic Spring Retreat*	Lake Arrowhead, CA	April 2024
AAS 243rd Meeting (Dissertation Talk)*	New Orleans, LA	Jan 2024
NSF AAPF Fellows Symposium*	New Orleans, LA	Jan 2024
The Baryon Cycle of Protocluster Galaxies†	Leiden, Netherlands	Oct 2023
First Structures in the Universe 2023†	Paris, France	Sept 2023
Inaugural Conference for Emerging Black Academics in STEM†	Pasadena, CA	May 2023
AAS 240th Meeting*	Pasadena, CA	June 2022
Georgia Tech College of Science REU Poster Symposium*	Atlanta, GA	July 2017

ADVISING & MENTORSHIP

Summary: Primary advisor for 1 undergraduate; formal mentor for 21 students (4 graduate, 17 undergraduate).

Research Advising

Sophia Um (undergraduate), Senior thesis at UC San Diego	2024-present
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Academic Mentorship

UC San Diego Astronomy & Astrophysics Postdoc × Grad Mentorship Program 2 grads	2024-present
Computational Astrophysics Research Preparation Program 17 undergrads	2024-present
UC Irvine PACE Mentorship Program Peer Mentor 2 grads	2019-2021

SERVICE & LEADERSHIP

Summary: Organized 3 conferences/workshops; Served on 2 departmental/student committees; Reviewer for 3 grant/telescope proposals; Developed and/or led 3 mentoring/outreach programs.

Scientific Organizing

Galaxy Formation & Evolution in Southern California Conference	2025
23rd Annual NSF AAPF Postdoc Symposium	2024
“Cultivating the Next Generation of Leaders” Splinter Session at the 240th AAS Meeting	2022

Departmental Committees

UCSD Astronomy & Astrophysics Colloquium Committee Member	2024-present
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Grant & Telescope Proposal Review

Hubble Space Telescope Cycle 33 TAC Expert Reviewer	2025
Future Investigators in NASA Earth and Space Science and Technology (FINESST) No-Panel Reviewer	2025
Hubble Space Telescope Cycle 32 TAC Expert Reviewer	2024

Academic Leadership

Founder and Program Director - Computational Astrophysics Research Preparation (CARP) NSF-funded coding and mentorship program for community college transfer students.	2023-present
Program Coordinator - Computational Research Access NEtwork (CRANE) International coding and mentorship program for historically underrepresented scholars.	2022-present
Co-Chair - UCI Physics & Astronomy Community Excellence (PACE) Peer Mentoring Program Student-led program focused on 1-on-1 and group mentoring for first-year graduate students.	2020-2023
Social Event Chair - UC Irvine Physics Graduate Caucus	2018-2020

Outreach

Invited Speaker - Peninsula Astronomical Society Talk Series	Jan 2026
Invited Speaker - Inclusive Pedagogy Session at Choir Conference	July 2025
Invited Speaker - Lick Observatory Summer Series Public Outreach Talks [video]	July 2025
Invited Speaker - AstroReach San Diego	Feb 2025
Volunteer - UC San Diego Cosmic Tours Portable Planetarium Shows	2025-present
Invited Guest - Astro[sound]bites Podcast Episode on Machine Learning in Astrophysics	Oct 2020
Volunteer - UC Irvine Telescope Outreach Program	2019-2020

OBSERVING EXPERIENCE

Summary: 16.5 nights on Keck (KCWI, KCRM, MOSFIRE, DEIMOS) as Co-Investigator across 5 programs.

Observatory / Instrument	Time	Program	Role
Keck/KWCI+KCRM	0.5 night	Illuminating the Physics of the Multiphase Baryon Cycle	Co-I
Keck/MOSFIRE	1.5 nights	MOSFIRE Survey of Galaxies in Early Rich Environments	Co-I
Keck/KCWI	4.5 nights	KCWI Survey of Ultradiffuse Galaxies in the Field	Co-I
Keck/DEIMOS	3.5 nights	DEIMOS Survey of the JWST CEERS Field	Co-I
Keck/DEIMOS	6.5 nights	Constraining the Physics of Satellite Quenching at $z < 1$	Co-I

MEDIA COVERAGE

Black in Galaxy Astrophysics, Nature Astronomy	June 2025
Devontae Baxter, Star Detective, UC Irvine Physical Sciences Communications	Feb 2021
Some Granular Columns Weigh Too Much, American Physical Society News	March 2020

PROFESSIONAL MEMBERSHIPS

American Astronomical Society	2020-present
National Society of Black Physicists	2024-present

SKILLS

Technical Skills: Python, L^AT_EX, Unix/Bash, Mathematica, Git, ADQL/SQL, Astrostatistics, Machine Learning
Soft Skills: Scientific communication, project management, student-centered teaching, mentoring across differences
Foreign Languages: Spanish (fluent), French (intermediate)

REFERENCES

Reference 1	Reference 2	Reference 3	Reference 4
Prof. Michael Cooper cooper@uci.edu Ph.D. Advisor	Prof. Alison Coil acoil@ucsd.edu Postdoctoral Mentor	Prof. Gregory Rudnick grudnick@ku.edu Research Collaborator	Prof. Ethan Nadler enadler@ucsd.edu Research Collaborator

List of Publications

PEER-REVIEWED PUBLICATIONS

Summary: **16** peer-review papers; **180+** citations; *h-index*=**7** (see ADS library or Google Scholar)

First-author publications (5 papers, 60+ citations):

5. **D. C. Baxter** et al., 2025, “Quantifying the Impact of Observational Incompleteness on Identifying and Interpreting Galaxy Protocluster Populations with the TNG-Cluster Simulation” *ApJ*, 990, 225
4. **D. C. Baxter** et al., 2025, “The Importance of Gas Starvation in Driving Satellite Quenching in Galaxy Groups at $z \sim 0.8$ ” *ApJ*, 979, 41
3. **D. C. Baxter**, et al. 2023, “When the Well Runs Dry: Modelling Environmental Quenching of High-mass Satellites in Massive Clusters at $z \gtrsim 1$ ” *MNRAS*, 526, 3716
2. **D. C. Baxter**, et al. 2022, “The GOGREEN Survey: Constraining the Satellite Quenching Timescale in Massive Clusters at $z \gtrsim 1$ ” *MNRAS*, 515, 5479
1. **D. C. Baxter**, et al. 2021, “A Machine Learning Approach to Measuring the Quenched Fraction of Low-Mass Satellites Beyond the Local Group” *MNRAS*, 503, 1636

Co-authored publications (11 papers; contributed to data acquisition/analysis and/or writing):

11. F. J. Mercado, **D. C. Baxter**, M. K. Rodriguez Wimberly, et al., 2025, “The Quenched Fraction of Satellites Around Simulated Milky Way-mass Galaxies” *ApJ*, submitted
10. D. Sikorski, et al. (incl. **D. C. Baxter**), 2025, “The *HST*-Hyperion Survey: Environmental Imprints on the Stellar-Mass Function at $z \sim 2.5$ ” *ApJ*, submitted
9. F. Giddings, et al. (incl. **D. C. Baxter**), 2025, “The *HST*-Hyperion Survey: Companion Fraction and Overdensity in a $z \sim 2.5$ Proto-supercluster” *ApJ*, submitted
8. L. Sandoval Ascensio, et al. (incl. **D. C. Baxter**), 2025, “Caught in the Act of Quenching: A Population of Post-Starburst UDGs” *OJAp*, 8, 110
7. G. Hewitt, et al. (incl. **D. C. Baxter**), 2025, “Distinct Origins of Environmentally Quenched Galaxies in the Core and Virialized Regions of Massive Clusters at $0.8 < z < 1.5$ ” *MNRAS*, 541, 49
6. H. Gully, et al. (incl. **D. C. Baxter**), 2025, “Insights into Environmental Quenching at $z \sim 1$: An Enhancement of Faint, Low-mass Passive Galaxies in Clusters” *MNRAS*, 539, 3058
5. G. Gururajan, et al. (incl. **D. C. Baxter**), 2025, “Gas Properties as a Function of Environment in the Proto-supercluster Hyperion at $z \sim 2.45$ ” *A&A*, 698, A312
4. L. Xie, G. et al. (incl. **D. C. Baxter**), 2024, “The First Quenched Galaxies: When and How?” *ApJL*, 967, L42
3. E. Kukstas, et al. (incl. **D. C. Baxter**), 2023, “The GOGREEN Survey: A Critical Assessment of Environmental Trends in Cosmological Hydrodynamical Simulations at $z \approx 1$ ” *MNRAS*, 518, 4782
2. M. K. Rodriguez Wimberly, M. C. Cooper, **D. C. Baxter**, et al., 2022, “Sizing from the Smallest Scales: The Mass of the Milky Way” *MNRAS*, 513, 4968
1. S. Mahajan, M. Tennenbaum, S. Pathak, **D. C. Baxter**, et al., 2020, “Reverse Janssen Effect in Narrow Granular Columns” *PRL*, 124, 128002

Other Publications (1 white paper):

1. The Fellows of the National Osterbrock Leadership Program (incl. **D. C. Baxter**), 2023, “Reimagining the Astronomy PhD for the 21st Century” white paper, *American Astronomical Society*