

\$300,000 – National Science Foundation: *Probing small galactic scales in large volumes with the Rubin Observatory* (Award# 2316748, PI: F. Mercado)

\$140,000 – Heising-Simons Foundation: *Using Galaxy Scaling Relations to Test Galaxy Formation & Dark Matter Models* (declined)

\$130,000 – University of California, Davis Chancellor’s Fellowship: *Using Galaxy Scaling Relations to Test Galaxy Formation & Dark Matter Models* (declined)

AWARDS & SCHOLARSHIPS	\$10,000 – UC Irvine National Osterbrock Leadership Fellowship	Spring 2022
	\$1,000 – UC Irvine Latino Excellence and Achievement Award	Spring 2021
	\$9,000 – UC Irvine Physical Sciences Diversity Fellowship	Spring 2021
	\$4,500 – UC Irvine Diversity Recruitment Fellowship	Fall 2017
	\$800 – President’s Student Research Travel Scholarship	Winter 2016
	\$20,000 – Cal-Bridge Scholarship	2015 - 2017
\$4,000 – TELACU Scholarship	2013-2017	

PUBLICATIONS LEAD AUTHOR/MAJOR CONTRIBUTOR

Mentees highlighted in *bolded italics*

21. Host property effects on satellite quenched fractions around simulated Milky Way-like galaxies: **F. J. Mercado**, D. Baxter, M. K. Rodriguez Wimberly, J. Moreno, C. Wheeler (2026); [In prep; draft available upon request](#)
20. Environmental effects on galaxy formation time scales in FIREbox: **F. J. Mercado**, **B. Giraud Calderon**, J. Moreno, C. Wheeler, FIRE Collaboration (2025); [In prep; draft available upon request](#)
19. Satellite quenched fractions around simulated Milky Way-like galaxies: **F. J. Mercado**, D. Baxter, M. K. Rodriguez Wimberly, J. Moreno, C. Wheeler, P. Gandhi, J. Samuel, L. Tortora, A. Wetzel, R. Fedmann (2025); [Submitted to ApJ; arXiv:2512.06071](#)
18. Effects of galactic environment on size and dark matter content in low-mass galaxies: **F. J. Mercado**, J. Moreno, R. Feldmann, M. Zeender, J. A. Benavides, J. M. Piotrowska, C. Klein, C. Wheeler, L. Necib, J. S. Bullock, P. F. Hopkins (2025); [ApJ, Volume 983, Issue 2, id.93, 14 pp.](#)
17. Hooks & Bends in the RAR: Discriminatory Tests for Dark Matter and MOND: **F. J. Mercado**, J. S. Bullock, J. Moreno, M. Boylan-Kolchin, A. Wetzel, C. Faucher-Giguère, J. Samuel (2024); [MNRAS, Volume 530, Issue 2, pp.1349-1362](#)
16. Comparing implementations of self interacting dark matter in the GIZMO and AREPO codes: **H. Meskhidse**, **F. J. Mercado**, O. Sameie, V. Robles, J. S. Bullock, M. Kaplinghat, J. O. Weatherall (2022); [MNRAS, Volume 513, Issue 2, pp.2600-2608](#)
15. Amplified J-factors in the galactic center for velocity-dependent dark matter annihilation in FIRE simulations: **D. McKeown**, J. S. Bullock, **F. J. Mercado**, Z. Hafen, M. Boylan-Kolchin, A. Wetzel, L. Necib, P. F. Hopkins, S. Yu (2021); [MNRAS, Volume 513, Issue 1, pp.55-70](#)
14. A Relationship Between Stellar Metallicity Gradients & Galaxy Age in Dwarf Galaxies: **F. J. Mercado**, J. S. Bullock, M. Boylan-Kolchin, J. Moreno, A. Wetzel, K. El-Badry, A.S. Graus, A. Fitts, P. F. Hopkins, C. Faucher-Giguère, A. B. Gurvich (2020); [MNRAS, Volume 501, Issue 4, pp.5121-5134](#)

CONTRIBUTING CO-AUTHOR

13. Protogalaxy, thick disk, thin disk: Why did the Milky Way evolve in three kinematic phases?: O. Myrtaj, J. S. Bullock, M. Boylan-Kolchin, A. Wetzel, J. Moreno, **F. J. Mercado** (2026); [In prep; draft available upon request](#)

12. Beyond Cloud-9: The case for discovering more HI-rich failed halos:
J. Moreno, C. Wheeler, **F. J. Mercado**, M. K. Rodriguez Wimberly, P. J. Gandhi, J. Samuel, R. Feldmann, J. S. Bullock, A. Wetzel, M. Boylan-Kolchin (2026); [Submitted to ApJ](#)
11. Confronting the Diversity Problem: The Limits of Galaxy Rotation Curves as a tool to Understand Dark Matter Profiles: I. S. Sands, P. F. Hopkins, A. Shen, M. Boylan-Kolchin, J. S. Bullock, C. Faucher-Giguère, **F. J. Mercado**, J. Moreno, L. Necib, X. Ou, S. Wellons, A. Wetzel (2024); [ApJ, Volume 1000, Issue 1, id.127, 18 pp.](#)
10. The shape of FIREbox galaxies and a potential tension with low-mass disks:
C. Klein, J. S. Bullock, L. Xia, J. Moreno, R. Feldmann, **F. J. Mercado**, C. Faucher-Giguère, J. Stern, N. N. Sanchez, A. Hussein (2025); [ApJ, Volume 998, Issue 1, id.125, 13 pp.](#)
9. Igniting galaxy formation in the late universe:
J. Moreno, C. Wheeler, **F. J. Mercado**, M. K. Rodriguez Wimberly, J. Samuel, J. S. Bullock, R. Feldmann, P. F. Hopkins (2025); [ApJ, Volume 997, Issue 2, id.181, 17 pp.](#)
8. How invisible stellar halos bias our understanding of ultra-faint galaxies:
C. Wheeler, J. Moreno, M. K Rodriguez Wimberly, **F. J. Mercado**, J. S. Bullock, M. Boylan-Kolchin, P. J. Gandhi, S. R. Loebman, P. F. Hopkins (2025); [ApJ, Volume 995, Issue 2, id.162, 15 pp.](#)
7. Disks no more: the morphology of low-mass simulated galaxies in FIREbox:
J. A. Benavides, L. V. Sales, A. Wetzel, J. Moreno, R. Feldmann, **F. J. Mercado**, J. S. Bullock, P. F. Hopkins, C. Faucher-Giguère, J. Stern, C. Wheeler, D. Keres (2025); [MNRAS, Volume 544, Issue 4, pp. 4651-4664](#)
6. Pickles on FIRE: The 3D Shape Evolution of Simulated Milky Way-Mass Galaxies:
L. Xia, C. Klein, J. S. Bullock, M. Boylan-Kolchin, V. Caudillo, J. Moreno, **F. J. Mercado**, R. Feldmann (2025); [ApJ, Volume 998, Issue 1, id.125, 13 pp.](#)
5. Stellar Metallicities and Gradients in the Faint M31 Satellites Andromeda XVI and Andromeda XXVIII:
S. W. Fu, D. R. Weisz, E. Starkenburg, N Martin, M. L. M. Collins, A. Savino, M. Boylan-Kolchin, P. Côté, E. Dolphin, N. Longeard, M. L. Mateo, **F. J. Mercado**, N. R. Sanford, E. D. Skillman (2024); [ApJ, Volume 975, Issue 1, id.2, 14 pp.](#)
4. Size-mass relations for simulated low-mass galaxies: mock imaging versus intrinsic properties:
C. Klein, J. S. Bullock, J. Moreno, **F. J. Mercado**, P. F. Hopkins, R. K. Cochrane, J. A. Benavides (2024); [MNRAS, Volume 532, Issue 1, pp.538-548](#)
3. Stellar Metallicities and Gradients in the Isolated, Quenched Low-mass Galaxy Tucana:
S. W. Fu, D. L. Weisz, E. Starkenburg, N Martin, **F. J. Mercado**, A. Savino, M. Boylan-Kolchin, P. Côté, A. E. Dolphin, N. Longeard, M. L. Mateo, J. Samuel, N. R. Sanford (2024); [ApJ, Volume 965, Issue 1, id.36, 23 pp.](#)
2. Galaxies lacking dark matter produced by close encounters in a cosmological simulation:
J. Moreno, S. Danieli, J. S. Bullock, R. Feldmann, P.F.Hopkins, O. Catmabacak, A. Gurvich, A. Lazar, C. Klein, C. B. Hummels, Z. Hafen, **F. J. Mercado**, S. Yu, F.Jiang, C. Wheeler, A. Wetzel, D. Angles-Alcázar, M. Boylan-Kolchin, E. Quataert, C.A. Faucher-Giguère, D. Keres (2022); [Nature Astronomy, Volume 6, p. 496-502](#)
1. The time-scales probed by star formation rate indicators for realistic, bursty star formation histories from the FIRE simulations: J. Florez Velázquez, A. Gurvich, C. Faucher-Giguère, J. Bullock, T. Starkenburg, J. Moreno, A. Lazar, **F. J. Mercado**, J. Stern, M. Sparre, C. Hayward, A. Wetzel, K. El-Badry (2020); [MNRAS, Volume 501, Issue 4, pp.4812-4824](#)

**PAST &
UPCOMING
PRESENTA-
TIONS**

INVITED CONFERENCE PRESENTATIONS:

3. 9th biennial Frank N. Bash Symposium – Low-mass galaxies review talk (Austin, TX) Sep 2025
2. AAS special session on student-centered pedagogy (Anchorage, AK) Jun 2025
1. First Joint NSBP-NSHP Conference (Houston, TX) Nov 2024

INVITED COLLOQUIA & SEMINARS:

16. University of Washington Astronomy Colloquium (Seattle, WA) Feb 2026
15. IPAC Lunch Seminar (Pasadena, CA) Jan 2026
14. Yale University Galaxies Seminar (New Haven, CT) Oct 2025
13. USC CosmoLab Seminar (Los Angeles, CA) Sep 2025
12. UC Santa Cruz Lamat Institute Science Talk (Santa Cruz, CA) Jul 2025
11. UW-Madison Science Seminar [Virtual] (Madison, WI) Feb 2025
10. UCSD/CSUSD Astronomy & Astrophysics Colloquium (La Jolla, CA) Jan 2025
9. Cal Poly Pomona Physics & Astronomy Colloquium (Pomona, CA) Oct 2024
8. Cal State LA Colloquium (Los Angeles, CA) March 2024
7. Carnegie Observatories Colloquium (Pasadena, CA) Feb 2024
6. TAPIR Seminar at Caltech (Pasadena, CA) Jan 2024
5. CSU San Bernardino Physics & Astronomy Colloquium (San Bernardino, CA) Nov 2023
4. UC Riverside Astronomy Seminar (Riverside, CA) Oct 2023
3. Pomona College Physics & Astronomy Colloquium (Claremont, CA) Sep 2023
2. Northwestern University Science Happy Hour [Virtual] (Evanston, IL) Apr 2021
1. Ohio Sate ArXiv Seminar [Virtual] (Columbus, OH) Feb 2021

CONTRIBUTED CONFERENCE PRESENTATIONS:

23. End of Star Formation Workshop (Champaign, IL) Mar 2026
22. 247th AAS Meeting (Phoenix, AZ) Jan 2026
21. 24th NSF Astronomy & Astrophysics Postdoc Symposium (Phoenix, AZ) Jan 2026
20. New Data that Challenge Assumptions in Early Galaxy Evolution (Acadia, ME) Jul 2025
19. Galactic Frontiers II (Hanover, NH) Jun 2025
18. 246th AAS Meeting (Anchorage, AK) Jun 2025
17. NSF MPS-Ascend Postdoctoral Fellow Conference (Nashville, TN) Oct 2024
16. Galaxy Formation & Evolution in Southern California (Pasadena, CA) Aug 2024
15. Dwarf Galaxies, Star Clusters & Stellar Streams in the LSST Era (Chicago, IL) Jul 2024
14. 23nd NSF Astronomy & Astrophysics Postdoc Symposium (New Orleans, LA) Jan 2024
13. 4th Regional Extragalactic Astronomy Meeting (Córdoba, Argentina) Dec 2023
12. Galaxy Formation & Evolution in Southern California (Riverside, CA) Aug 2024
11. 240th AAS Meeting (Pasadena, CA) Jun 2022
10. Flatiron CCA Symposium (New York City, NY) Aug 2021
9. Galaxy Formation & Evolution in Southern California (Pasadena & Irvine, CA) 2017 - 2019
8. Cal Poly Pomona SIAM Research Symposium (Pomona, CA) Apr 2016
7. UC Irvine Summer Research Symposium (Irvine, CA) May 2017
6. Cal Poly Pomona SIAM Research Symposium (Pomona, CA) Apr 2017
5. 229th AAS Meeting (Grapevine, TX) Jan 2017
4. Cal-Bridge/Campare Symposium, Cal Poly Pomona (Pomona, CA) Sep 2016
3. UC Irvine Summer Research Symposium (Irvine, CA) Aug 2016
2. Galaxy Formation & Evolution in Southern California (Pasadena, CA) Aug 2016
1. 227th AAS Meeting (Kissemmee, FL) Jan 2016

VISITING GROUP MEETING PRESENTATIONS:

5. Andrew Benson's Group Meeting, Carnegie Observatories (Pasadena, CA) Nov 2024
4. Phil Hopkins' Group Meeting, Caltech (Pasadena, CA) Sep 2023
3. Tom Quinn's Group Meeting, University of Washington (Seattle, WA) Mar 2017
2. Mark Vogelsberger's Group Meeting, MIT (Cambridge, MA) Jul 2015
1. Lars Hernquist's Group Meeting, Harvard CfA (Cambridge, MA) Jul 2015

WORKSHOPS:

3. Towards ethical outreach in astronomy and astrophysics (Choir Conference; Acadia, ME) Jul 2025
2. Mentorship and cultivating the next generation of leaders (AAS; Pasadena, CA) Jun 2022
1. Various [PACE workshops](#) on topics relevant to first year grads (Irvine, CA) 2021-2022

OUTREACH:

8. Friday Night Flights **Invited Speaker** (Pico Rivera, CA) Sep 2025
7. Cosmos & Coffee Inaugural Talk Sep 2025
6. St. Louis of France STEM Career Showcase **Invited Speaker** Jan 2024
5. UCI Astronomy Club **Invited Graduate Research Talk** (Irvine, CA) Apr 2023
4. UCI Astronomy Club **Invited Astronomer Talk** (Irvine, CA) May 2020
3. UC Irvine SACNAS Chapter High School Visit Day (Irvine, CA) Mar 2019
2. WATzUP Middle School Workshop **Invited Speaker** (Orange County, CA) Spring 2018
1. BUILD Star Party **Invited Speaker** (Upland, CA) May 2017

ADVISING & MENTORSHIP

RESEARCH ADVISING/CO-ADVISING:

13. **B. Giraud Calderon** ([Supervised Sr. thesis](#)) | Pomona College Undergrad 2024 - 2026
Environmental effects on galaxy formation timescales
12. **D. E. Olloqui Cortés** | Pomona College Undergrad Summer 2025
Creating and using mock spaxel maps with FIREbox-simulated galaxies
11. **L. Standifer** | Pomona College Undergrad Summer 2025
Creating and using mock spaxel maps with FIREbox-simulated galaxies
10. **L. McRoberts** | Pomona College Undergrad Spring 2025
Creating and using mock spaxel maps with FIREbox-simulated galaxies
9. **K. Chen** | Harvey Mudd College Undergrad Fall 2024
Effect of reionization on Local Group dwarf galaxies (project continuation)
8. **B. Hanf** ([Supervised Sr. thesis](#)) | Pomona College Undergrad AY 2024 - 2025
Stellar stream finding in the FIREbox cosmological volume simulation
7. **I. Hahn** | Pomona College Undergrad Summer 2023
Finding voids in simulated cosmological volumes
6. **P. Qin** | Pomona College Undergrad Summer 2022
Finding galaxy streams in the FIREbox simulation
5. **N. Canim** | Pomona College Undergrad Summer 2022
Finding galaxy streams in the FIREbox simulation
4. **H. Meskhidse** ([Resulted in publication](#)) | UC Irvine Grad 2021 - 2022
Comparing implementations of SIDM in the GIZMO and AREPO codes
3. **E. Chicas** | Cal State Long Beach Undergrad Summer 2020
Effect of reionization on Local Group dwarf galaxies
2. **I. Ware** | San Francisco State University Undergrad Summer 2020
Effect of reionization on Local Group dwarf galaxies (worked with Evangelina)
1. **D. McKewon** ([Resulted in publication](#)) | UC Irvine Grad Summer 2020
Amplified J-factors in the galactic center in FIRE simulations

FORMAL PROFESSIONAL MENTORSHIP:

- | | |
|---|-------------|
| UC Santa Cruz LAMAT Mentor 1 undergrad | Summer 2025 |
| UC Irvine PACE Mentorship Program Peer Mentor 4 grads | 2018 - 2023 |
| UC Irvine Competitive Edge Peer Mentor 2 grads | Summer 2022 |
| Cal-Bridge Graduate Mentor 2 undergrads | 2019 - 2022 |

TELACU Graduate Mentor | 2 undergrads

2019 - 2022

TEACHING

Instructor of record in **boldface**

POMONA COLLEGE:

Regular Discussion Guest – Extragalactic Astronomy (ASTR 125)

Spring 2024 & 2026

Regular Discussion Guest – The Milky Way (ASTR 127)

Spring 2025

Introduction to Galaxies & Cosmology (ASTR 002)

Spring 2024

Guest Lecture – Astro Collective (ASTR 001)

Oct 2023

SOUTHERN CALIFORNIA UNIVERSITY OF HEALTH SCIENCES:

Accelerated Sciences Division – 5 week courses

Basic Physics I Online (PHYS 211)

Spring 2023

Basic Physics I Online Laboratory (PHYS 211L)

Spring 2023

Basic Physics II Online (PHYS 216)

Spring 2023

Basic Physics II Online Laboratory (PHYS 216L)

Spring 2023

UC IRVINE:

Basic Physics I (PHYSICS 3A)

Summer 2022

Basic Physics II (PHYSICS 3B)

Summer 2021 & 2022

Intro to Mathematical Physics (PHYSICS 2)

Summer 2021

Statistical Mechanics (PHYSICS 115A)

Fall 2018

Life in the Universe (PHYSICS 20E)

Spring/Fall 2018

Introduction to Mathematical Physics (PHYSICS 2)

Fall 2017

CAL POLY POMONA:

General Physics III (PHYS 133)

Fall 2015/Winter 2016

General Physics I (PHYS 131)

Spring 2015

ELSEWHERE:

[Learning Shack](#) Math and Physics Tutor

2018 - 2022

[Ardent Academy](#) AP Physics C Instructor

Winter 2020

TRAINING & CERTIFICATIONS

UCI/CSULB [PRE-Professor Program](#)

Spring 2021

UCI OIE [Inclusive Excellence Certificate](#)

Fall 2020

UCI DTEI [Certificate in Course Design](#)

Spring 2020

[CIRTL Associate Level](#)

Spring 2020

SERVICE & LEADERSHIP

SCIENTIFIC ORGANIZING COMMITTEES:

[23rd Annual NSF AAPF Postdoc Symposium](#) (**Chair**; National Harbor, MD)

Jan 2025

[Galaxy Formation & Evolution in Southern California](#) (Member; Pasadena, CA)

Sep 2024

[Galaxy Formation & Evolution in Southern California](#) (**Chair**; Irvine, CA)

Aug 2019

REVIEWER:

Astronomical Society of the Pacific Awards Reviewer

2025 - Present

NASA Panel Reviewer

2025 - Present

The Astrophysical Journal

2023 - Present

ORGANIZATIONS:

[Astronomical Society of the Pacific](#) Board Fellow

2025 - Present

NSF [Ascend Mentor Network](#) Advisory Fellow Board Member

2025

UC Irvine [PACE Mentorship Program](#) **Co-Chair** & Administrator

2022 - 2023

UC Irvine [Physics Graduate Caucus](#) **Diversity Chair**

2020 - 2022

UC Irvine [DECADE](#) Physics Graduate Representative

2018 - 2022

OUTREACH:

Cosmos & Coffee Founder & Organizer	2026 - Present
Pomona College Latine Undergraduates in Physics & Astronomy (LUPA) co-organizer	2025 - 2026
Pomona College Eclipse Party Co-Host	Apr 2024
UC Irvine Telescope Outreach Program Co-Organizer	2018 - 2019
UC Irvine WATzUP Group Leader	2017 - 2019

**MEDIA
COVERAGE**

5. NSF Grant Will Fund Symposium for Post-Doctoral Fellows	Sep 2024
4. Astronomy Post-Doc and Professor Publish Paper on Dark Matter and Galaxies	Apr 2024
3. UC Irvine astronomers simulations support dark matter theory	Apr 2024
2. Francisco Mercado wins UCI Latinx Excellence and Achievement Award	Mar 2021
1. From home, Francisco Mercado is studying distant galaxies	Apr 2020

PROFESSIONAL REFERENCES **Jorge Moreno** | Associate Professor, Pomona College
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+(213) 740-2531, james.bullock@usc.edu

Philip F. Hopkins | Ira S. Bowen Professor of Theoretical Astrophysics, Caltech
+1(626) 395-2563, phopkins@caltech.edu