

Julio M. Morales

EDUCATION

NEW MEXICO STATE UNIVERSITY

PH.D. IN ASTRONOMY

Aug 2022 - Present | Las Cruces, NM
College of Arts and Sciences

UNIVERSITY OF MASSACHUSETTS AMHERST

B.S IN PHYSICS AND ASTRONOMY

May 2022 | Amherst, MA
College of Natural Sciences

CONTACT INFO

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SKILLS

PROGRAMMING

- Python • GitHub • Git
- \LaTeX • HTML

SPOKEN LANGUAGES

- English (native fluent)
- Spanish (native proficient)

RESEARCH EXPERIENCE

GRADUATE RESEARCH ASSISTANT | NEW MEXICO STATE UNIVERSITY

Aug 2022 - Present | Las Cruces, NM

Advisor: Professor Jason Jackiewicz

- Optimized mode filtering of helioseismic data.
- Performed travel-time measurements of acoustic oscillations in the Sun.
- Used simulation data to optimize filtering and travel-time statistics.
- Developed helioseismic inversions to produce 3D velocity field maps of the solar interior near active regions.

POST-BACCALAUREATE RESEARCHER | AMHERST COLLEGE

July 2022 - Sep 2022 | Amherst, MA

Advisor: Professor Katherine B. Follette

- Developed Python code to optimize photometric measurements for direct-imaging.
- Used model and literature spectra to interpret data of weakly-accreting T-Tauri/Herbig stars.
- Traveled to present results of research (AAS 2022, Cool Stars 21, SACNAS 2022).
- Drafted a first-authored paper of results.

SENIOR THESIS | UMASS AMHERST

Sep 2021 - May 2022 | Amherst, MA

Advisor: Professor Katherine B. Follette

- Title: Accretion Variability in Transitional Disk Host-Stars: Second-to-Minute Timescale $H\alpha$ Variability in the Giant Accreting Protoplanet Survey

FIVE COLLEGE ASTRONOMY DEPARTMENT SUMMER RESEARCHER | AMHERST COLLEGE

July 2021 - Sep 2021 | Amherst, MA

Advisor: Professor Katherine B. Follette & Dr. Connor Robinson

- Developed Python code to perform optimized aperture photometry on survey data.
- Planned and ran outreach event.

TELESCOPE OBSERVING EXPERIENCE

SOUTHERN ASTROPHYSICAL RESEARCH (SOAR) TELESCOPE

Oct 2022 | Cerro Pachón, Chile

AMHERST COLLEGE OBSERVATORY

Oct 2022 | Amherst, Massachusetts

CONFERENCES/PRESENTATIONS

- SACNAS Diversity in STEM Conference | San Juan, PR (presented in Oct 2022)
- 2022 Northeast Star and Planet Formation Meeting | Middleton, CT (attended in July 2022)
- Cool Stars Conference | Toulouse, FR (presented in July 2022)

- American Astronomical Society Conference 240 | Pasadena, CA
(presented in June 2022)
- Amherst College Physics and Astronomy Senior Thesis Talk | Amherst, MA
(presented in May 2022)
- Five College Astronomy Department Thesis Picnic Talk | Amherst, MA
(presented in May 2022)
- SACNAS Diversity in STEM Conference | (Virtual)
(attended in Nov 2021)
- Amherst College Summer Research Poster Session | Amherst, MA
(presented in Sep 2021)
- Five College Astronomy Department Research Presentation | Amherst, MA
(presented in Aug 2021)

DIVERSITY, EQUITY, & INCLUSION

INCLUSIVE ASTRONOMY | NEW MEXICO STATE UNIVERSITY

Committee Member | Aug 2022 - Present | Las Cruces, New Mexico

- Participated in various discussions on racism in academia.
- Facilitated discussion on ableism in academia.
- Developed presentable story packages of various astronomers of color.
- Participated in discussions on inclusive language in NMSU astronomy department website.

LETTERS TO A PRE-SCIENTIST

Scientist Pen-Pal | Aug 2022 - Present

- Exchanged letters with various middle-school-aged students of color aspiring to become scientists.

HIDDEN FIGURES WORKSHOP | TRIO UPWARD BOUND, UMASS BOSTON

Founder & Facilitator | 2020 | Boston, MA

- Exposed students to various scientists and mathematicians of color.
- Facilitated discussions of racism and misogyny in STEM education/history.
- Final projects had students present on a “Hidden Figure” of their choosing, their most notable scientific contributions, and their life experiences.
- Interviewed the classes favorite “Hidden Figure”—Professor Reva K. Williams.

OUTREACH

"SO YOU WANNA BE AN ASTRONOMER..." DOCUMENTARY

Executive Producer | In progress

STAR PARTY

Observing Assistant | October 2022 | Las Cruces, New Mexico

RESEARCH EXPERIENCE FOR UNDERGRADUATES Q&A PANEL

Panelist | September 2021 | Amherst, Massachusetts

EXPLORE THE SOLAR SYSTEM: AMAZING FACTS & HISTORY OF THE SOLAR SYSTEM

Outreach Coordinator | July 2021 | Northampton, Massachusetts

MODERN ASTRONOMY SUMMER PRE-COURSE

Observing Night Assistant | July 2021 | Amherst, Massachusetts

TEACHING HISTORY

INTRODUCTION TO ASTRONOMY | New Mexico State University
Lab Instructor | 2022-Present | Las Cruces, New Mexico

TEACHING ACADEMY | New Mexico State University
Sustaining Member | 2022-Present | Las Cruces, New Mexico

ASTRONOMY HELP DESK | UMass Amherst
Tutor | 2021-2022 | Amherst, Massachusetts

TRIO UPWARD BOUND | UMass Boston
Instructor/Tutor/TA | 2020 | Boston, Massachusetts

TRIO UPWARD BOUND | UMass Boston
Tutor/TA | 2019 | Paxton, Massachusetts

NON-RESEARCH MENTORSHIP

(Mentorship materials can be found at: JulioM1823.com)

- Seth Wright (Undergraduate) | 2022-Present | New Mexico State University
- Mariano Gracia (Undergraduate) | 2023-Present | New Mexico State University

AWARDS/HONORS

- AAS Chambliss Astronomy Achievement Award Competition (Medalist) | 2022
- Webber Voyager Graduate Fellowship | 2022 | \$7,500/yr
- SACNAS Travel Scholarship | 2022
- UMass Amherst Deans List Honors | 2021-2022
- John and Abigail Adams Scholarship | 2017 | \$1,400/yr

PUBLICATIONS

- [1] W. O. Balmer, K. B. Follette, L. M. Close, J. R. Males, R. J. De Rosa, J. I. A. Redai, A. Watson, A. J. Weinberger, K. M. Morzinski, J. Morales, K. Ward-Duong, and L. Pueyo. Improved orbital constraints and $h\alpha$ photometric monitoring of the directly imaged protoplanet analog hd 142527 b, 2022.
- [2] K. B. Follette, L. M. Close, J. R. Males, K. Ward-Duong, W. O. Balmer, J. Adams Redai, J. Morales, C. Sarosi, B. Dacus, R. J. De Rosa, F. Garcia Toro, C. Leonard, B. Macintosh, K. M. Morzinski, W. Mullen, J. Palmo, R. Nzaba Saitoti, E. Spiro, H. Treiber, J. Wang, D. Wang, A. Watson, and A. J. Weinberger. The Giant Accreting Protoplanet Survey (GAPlanetS) – Results from a Six Year Campaign to Image Accreting Protoplanets. arXiv, page arXiv:2211.02109, Nov. 2022.
- [3] J. M. Morales, W. O. Balmer, and K. B. Follette. $H\alpha$ variability in the giant accreting protoplanet survey, 2023 (in progress).