

# Sierra L. Grant, Ph.D.

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## Employment

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| <b>Carnegie Institution for Science   Earth and Planets Laboratory</b><br><i>Carnegie Postdoctoral Fellow</i>                         | <b>09/2024–Present</b> |
| <b>Max Planck Institute for Extraterrestrial Physics</b><br><i>Postdoctoral Researcher</i><br>Supervisor: Prof. Ewine F. van Dishoeck | <b>09/2021–09/2024</b> |

## Education

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <b>Boston University</b><br><i>Ph.D.</i><br>Advisor: Prof. Catherine C. Espaillat<br>“Protoplanetary Disk Evolution: From Inner Disk Accretion to Outer Disk Dust Evolution” | <b>05/2017–08/2021</b> |
| <b>Boston University</b><br><i>M.A.</i>                                                                                                                                      | <b>09/2015–05/2017</b> |
| <b>University of Michigan</b><br><i>B.S. Astronomy &amp; Astrophysics and B.S. Interdisciplinary Physics</i>                                                                 | <b>09/2011–05/2015</b> |

## Research Interests

Planets form in the dynamic and complex disks of gas and dust that surround young stars. I have used observations across the electromagnetic spectrum, with a particular focus on infrared spectroscopy, to constrain disk composition, structure, and evolutionary state. Lately, I am using JWST data to measure inner disk composition, complementing these observations with those from ALMA and VLT to understand disks at all spatial scales. Part of my work is now pushing these observations down to the planetary-mass regime to explore potentially moon-forming disks. My vision is to utilize the latest advances in instrumentation, including JWST, the ELTs, and ALMA, paired with state-of-the-art modeling efforts, to take the next fundamental steps in our understanding of planet and moon formation and the formation of our own Solar System.

## Accepted Observing Proposals

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| <b>As PI or Co-PI:</b> .....                                                                                                                                                                                                                                                                                                                               |
| – JWST: <ul style="list-style-type: none"><li>– 12.8 hours in Cycle 5 (joint with ALMA, PID 12654)</li><li>– 67 hours in Cycle 4 from two programs as Co-PI (PIDs 7538 and 7792)</li><li>– 41.5 hours in Cycle 2 (PID 3886)</li></ul>                                                                                                                      |
| – ALMA: <ul style="list-style-type: none"><li>– 18.4 hours in Cycle 13 (two A-ranked proposals, 2026.1.01036.S and 2026.1.01093.S, with the latter being joint with JWST)</li><li>– 13.4 hours in Cycle 12 (2025.1.00717.S)</li><li>– 15.4 hours in Cycle 11 (2024.1.01296.S and 2024.1.00867.S)</li><li>– 4.2 hours in Cycle 7 (2019.1.00951.S)</li></ul> |

- VLT:
  - 7.9 hrs with MUSE, DDT in P117 for coordinated observations with JWST
  - 20.3 hours in P112, 17.1 hours in P111 using CRILES+
- NOEMA (18 hours, ranked “A”, Co-PI)
- Gemini South Observatory (17 hours in 2020A, 7.7 hours in 2020B)
- NASA Infrared Telescope Facility (3 half-nights each in 2019B and 2020A)
- Lowell Discovery Telescope, Lowell Observatory (10 half-nights)

**As Co-I:**.....

- JWST-MIRI (24.5 hours in Cycle 4, 93 hours in Cycle 5)
- JWST-NIRSpec (5.6 hours in Cycle 2)
- VLT-CRILES+ (41 hours in P110, 25 hours in P111)
- ALMA (various programs across multiple cycles)
- *Hubble Space Telescope* (6 orbits) & *Chandra X-ray Observatory* (35ks) & VLA (9.6 hours)
- *Spitzer Space Telescope* (Proposal ID #12036)

## Honors, Awards, and Funding

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**Over \$891,000 awarded as PI, Co-PI, or Admin PI as of 1 October, 2026**

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|--------------------------------|-------------------------------------------------------------------------------------|
| 2026                           | JWST Cycle 5 GO Awards (PID 10145), US Admin PI, \$86,000                           |
| 2026–2028                      | International Space Science Institute (ISSI) International Team Lead (team #26-673) |
| 2025                           | JWST Cycle 4 GO Awards (PIDs 7538, 7792, 7890), Co-PI and US Admin PI, \$516,000    |
| 2023                           | French national space agency (CNES) funding grant, Co-grant PI, \$130,000           |
| 2023                           | JWST Cycle 2 GO Awards (PID 3886), PI, \$126,000                                    |
| 2020                           | ALMA Student Observing Support, \$33,000                                            |
| Fall 2015                      | Boston University Dean's Fellowship                                                 |
| Fall 2011, 2013, & Spring 2014 | University of Michigan University Honors                                            |

## Leadership and Service

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- International Space Science Institute (ISSI) International Team Lead (team #26-673, 2026–2028)  
 Leading a team of 15 experts, across all career stages, to investigate circumplanetary disks.  
 Team members: Arabhavi, Bae, Benisty, Bonnefoy, Cridland, Cugno (co-lead), Flock, Follette, Mâlin, Marleau, Pinilla, Tabone, Ward-Duong, Zhaohuan
- Elected Representative for the Carnegie Institution Postdoctoral Association (01/2025 – 01/2026)
- Women as Leaders in Astronomy Organizer (09/2018 – 08/2021)
- Graduate Student Representative (09/2018 – 08/2019)
- Carnegie Astronomy Seminar and Journal Club organizer
- JWST Time Allocation Committee
- Panel member/reviewer for NSF, NASA, and ERC grants
- Referee for AAS and A&A Journals

## Talks and Presentations, including planned, \* indicates invited talk

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| 12/2026* | University of Arizona Colloquium                                                                     |
| 11/2026* | Rocky Worlds Discussion                                                                              |
| 07/2026* | Discs on the Exe                                                                                     |
| 05/2026* | Gas Giant Planet Formation: Clues from Composition                                                   |
| 05/2026* | Joint NRAO/UVA Colloquium                                                                            |
| 03/2026* | University of Florida Astronomy Colloquium                                                           |
| 02/2026* | Carnegie Observatories Colloquium                                                                    |
| 11/2025* | ExoELT: Planetary Formation and Exoplanets in the ELT Era                                            |
| 11/2025* | University of Maryland Astronomy Colloquium                                                          |
| 09/2025* | <a href="#">Carnegie Neighborhood Lecture</a>                                                        |
| 06/2025* | Gordon Conference on the Origins of Solar Systems                                                    |
| 05/2025* | <a href="#">"Planets on the Edge" Kavli Institute for Theoretical Physics conference</a>             |
| 03/2025* | University of Rochester Astronomy Colloquium                                                         |
| 02/2025* | Celebrating 3 Years of JWST Observations of Planet-Forming Disks                                     |
| 10/2024  | JWST MIRI Science Conference                                                                         |
| 09/2024* | Earth & Planets Laboratory General Seminar                                                           |
| 06/2024* | GRAVITY+: impact on star and planet formation                                                        |
| 04/2024* | <a href="#">Harvard Radcliffe Institute, Next in Science: James Webb Space Telescope</a>             |
| 03/2024* | From Star to Planet Formation, Villa Vigoni                                                          |
| 02/2024* | Celebrating 30 Years of Protoplanetary Disk Chemistry: past, present, and future                     |
| 09/2023  | <a href="#">The First Year of JWST Science Conference</a>                                            |
| 01/2023* | MPE Center for Astrochemical Studies Seminar                                                         |
| 10/2022* | Observing the Universe in Motion: 5 Years of GRAVITY                                                 |
| 09/2022* | The Inner Regions of Protoplanetary Disks                                                            |
| 05/2022* | Center for Astrophysics SMA Seminar                                                                  |
| 05/2022  | MPE IR Group Tea Talk                                                                                |
| 05/2022* | ESO Star and Planet Formation Seminar                                                                |
| 02/2022  | An Infrared Bright Future for Ground-based IR Observatories in the Era of JWST                       |
| 03/2021  | Caltech Tea Talk                                                                                     |
| 12/2020  | <a href="#">Five years after HL Tau: a new era in planet formation</a>                               |
| 12/2018* | UMass Amherst Star and Planet Formation Lunch Talk                                                   |
| 07/2018  | Cool Stars 20 (Poster)                                                                               |
| 01/2018  | The 4th MA-CT Regional Star Formation Meeting                                                        |
| 12/2017  | Boston Area Exoplanet Science Meeting                                                                |
| 01/2017  | Regional Star Formation Meeting                                                                      |
| 06/2015* | Frontiers in Star Formation: Celebrating Contributions to the Field by Nuria Calvet and Lee Hartmann |
| 01/2015  | 225th American Astronomical Society Meeting (Poster)                                                 |
| 02/2014  | Scientista Symposium, Massachusetts Institute of Technology (Poster)                                 |

## Selected Press and Media

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- 01/2026 Scientific American, [JWST Spots Swirling Cradle for Exomoons](#)
- 12/2025 SETI Live Podcast & Interview, [Baby Moons in the Making?](#)
- 09/2025 Universe Today, [The JWST Spies The Raw Materials For Exomoons](#)
- 09/2025 USA Today, [NASA's Webb telescope gets a never-before-seen look at how moons form on exoplanets](#)
- 09/2025 NASA, [NASA's Webb Telescope Studies Moon-Forming Disk Around Massive Planet](#)
- 06/2024 NASA, [Webb Finds Plethora of Carbon Molecules Around Young Star](#)
- 02/2024 Scientific American, [JWST Is Tracking Down the Cosmic Origins of Earth's Water](#)
- 09/2023 Nature, [How worlds are born: JWST reveals exotic chemistry of planetary nurseries](#)
- 04/2023 MPE, [JWST peeks into the birthplaces of exoplanets](#)
- 03/2014 NOAO, [A Month of Personal Transformation at Kitt Peak](#)

## Publications

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**First-Author:** 290+ citations as of 1 October, 2026. The list can be accessed [here](#)

9. "A carbon-rich disk surrounding a planetary-mass companion"  
Gabriele Cugno & **Sierra L. Grant** (joint first authors)  
[Cugno & Grant 2025, ApJ, 991L, 46C, ApJ Letters](#)
8. "MINDS. A transition from  $H_2O$  to  $C_2H_2$  dominated spectra with decreasing stellar luminosity"  
**Sierra L. Grant**, Milou Temmink, Ewine van Dishoeck, and 19 others.  
[Grant et al. 2025, A&A, 702A,126G](#)
7. "MINDS. A multi-instrument investigation into the molecule-rich JWST-MIRI spectrum of the DF Tau binary system"  
**Sierra L. Grant**, Nicolas Kurtovic, Ewine van Dishoeck, and 26 others  
[Grant et al. 2024b, A&A, 689A, 85G](#)
6. "Full L- and M-band high resolution spectroscopy of the S CrA binary disks with VLT-CRIRES+ "  
**Sierra L. Grant**, Giulio Bettoni, Andrea Banzatti, Ewine van Dishoeck, and 6 others  
[Grant et al. 2024a, A&A, 684A, 213G](#)
5. "The  $\dot{M}-M_{disk}$  relationship for Herbig Ae/Be stars: a lifetime problem for disks with low masses?"  
**Sierra L. Grant**, Lucas M. Stapper, Michiel R. Hogerheijde, Ewine F. van Dishoeck, Sean Brittain, and Miguel Vioque  
[Grant et al. 2023b, AJ, 166, 147G](#)
4. "MINDS. The detection of  $^{13}CO_2$  with JWST-MIRI indicates abundant  $CO_2$  in a protoplanetary disk"  
**Sierra L. Grant**, Ewine F. van Dishoeck and 44 others  
[Grant et al. 2023a, ApJ, 947L, 6G, ApJ Letters](#)
3. "Accretion Properties in Herbig Ae/Be Stars as Traced by the Br $\gamma$  Line"  
**Sierra L. Grant**, Catherine C. Espaillat, Sean Brittain, Caleb Scott-Joseph, and Nuria Calvet  
[Grant et al. 2022, ApJ, 926, 229G](#)
2. "An ALMA Survey of Protoplanetary Disks in Lynds 1641"  
**Sierra L. Grant**, Catherine C. Espaillat, John Wendeborn, and 8 others  
[Grant et al. 2021, ApJ, 913, 123](#)
1. "Herschel Observations of Protoplanetary Disks in Lynds 1641"  
**Sierra L. Grant**, Catherine C. Espaillat, S. Thomas Megeath, Nuria Calvet, and 6 others  
[Grant et al. 2018, ApJ, 863, 13](#)

**Co-Author:** 1500+ citations as of 1 October, 2026. The list of 50+ manuscripts can be accessed [here](#).

## Affiliations and Outreach

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|-------------------|-----------------------------------------------------------------------|
| 01/2026 – present | Full AAS Member                                                       |
| 09/2021 – present | JWST MIRI mid-INfrared Disk Survey (MINDS) Team member                |
| 11/2021 – 09/2024 | VLT-GRAVITY Young Stellar Object team                                 |
| 09/2021 – 09/2024 | Planet Formation Witnesses and Probes: Transition Disks Research Unit |
| 09/2015 – 08/2021 | Women as Leaders in Astronomy (Boston University)                     |
| 09/2015 – 08/2021 | Boston University Astronomy Public Open Nights                        |
| 09/2018 – 05/2019 | Letters to a Pre-Scientist Pen Pal                                    |
| 09/2011 – 05/2015 | Student Astronomical Society                                          |
| 09/2011 – 05/2012 | Douglass Houghton Scholars Program                                    |
| 09/2011 – 05/2012 | Women in Science and Engineering Residency Program                    |
| 06/2010           | Michigan Technological University Women in Engineering Program        |

## Teaching and Mentoring

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|-------------------|--------------------------------------------------------------------------------------------------|
| Spring 2026       | 6-week Advancing Inclusive Mentoring (AIM) program                                               |
| 09/2021 – 12/2022 | Giulio Bettoni: Leiden University Ph.D. student analyzing JWST/MIRI and VLT/CRIRES+ observations |
| 06/2018 – 08/2019 | Caleb Scott-Joseph: BU Academy student analyzing near-infrared spectra                           |
| Spring 2016       | AS 203: Principles of Astronomy II Teaching Assistant                                            |