

# Sierra L. Grant, Ph.D.

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## Current Employment

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**Max Planck Institute for Extraterrestrial Physics** **09/2021–Current**  
*Postdoctoral Researcher*  
 Supervisor: Prof. Ewine F. van Dishoeck

## Education

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**Boston University** **05/2017–08/2021**  
*Ph.D.*

Advisor: Prof. Catherine C. Espaillat

“Protoplanetary Disk Evolution: From Inner Disk Accretion to Outer Disk Dust Evolution”

**Boston University** **09/2015–05/2017**  
*M.A.*

Advisor: Prof. Catherine C. Espaillat

**University of Michigan** **09/2011–05/2015**

*B.S. Astronomy & Astrophysics and B.S. Interdisciplinary Physics*

Advisor: Prof. Nuria P. Calvet

## Research Interests

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I study protoplanetary disks which are disks of gas and dust that surround young stars and are the birth places of exoplanets. Specifically, I focus on the inner disk structure and how populations of disks evolve. I use models and observations, with data from space-based (including *Spitzer* and *Herschel*) and ground-based telescopes (including the VLT, Lowell Discovery Telescope, Gemini South, NASA's IRTF, and ALMA), to characterize these protoplanetary disks and their evolution.

## Honors and Awards

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|-----------------------------------|---|
| 2020                              | ALMA Student Observing Support (\$33,148) |
| Fall 2015                         | Dean's Fellowship                         |
| Fall 2011, 2013,<br>& Spring 2014 | University Honors                         |

## Presentations

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|         |  |
|---------|--|
| 02/2022 | IR2022: An Infrared Bright Future for Ground-based IR Observatories in the Era of JWST – <b>Contributed Talk</b> |
| 03/2021 | Caltech Tea Talk – <b>Invited Talk</b>   |
| 12/2020 | Five years after HL Tau: a new era in planet formation – <b>Contributed Talk</b>                                 |
| 12/2018 | Star and Planet Formation Lunch Talk, Amherst, MA – <b>Invited Talk</b>  |
| 07/2018 | Cool Stars 20, Boston, MA – <b>Poster</b>  |

## Presentations (cont.)

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- 01/2018 The 4th MA-CT Regional Star Formation Meeting, Boston, MA  
– **Contributed Talk**
- 12/2017 Boston Area Exoplanet Science Meeting, Cambridge, MA – **Contributed Talk**
- 01/2017 Regional Star Formation Meeting, New Haven, CT – **Contributed Talk**
- 06/2015 Frontiers in Star Formation: Celebrating Contributions to the Field by Nuria Calvet and Lee Hartmann, Ann Arbor, MI – **Invited Talk**
- 01/2015 225th American Astronomical Society Meeting, Seattle, WA – **Poster**
- 02/2014 Scientista Symposium, Massachusetts Institute of Technology, Cambridge, MA  
– **Poster**
- 2013, 2014, & 2015 Undergraduate Research Presentation, University of Michigan, Ann Arbor, MI  
– **Poster**

## Publications

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### First-Author, Refereed:

- 01/2022 "*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, Nuria Calvet
- 06/2021 "*An ALMA Survey of Protoplanetary Disks in Lynds 1641*"  
**Sierra L. Grant**, Catherine C. Espaillat, John Wendeborn, John J. Tobin, Enrique Macías, Anneliese Rilinger, Álvaro Ribas, S. Thomas Megeath, William J. Fischer, Nuria Calvet, Kyoung Hee Kim  
ApJ, 913, 123
- 08/2018 "*Herschel Observations of Protoplanetary Disks in Lynds 1641*"  
**Sierra L. Grant**, Catherine C. Espaillat, S. Thomas Megeath, Nuria Calvet, William J. Fischer, Christopher J. Miller, Kyoung Hee Kim, Amelia M. Stutz, Álvaro Ribas, Connor E. Robinson  
ApJ, 863, 13

### Co-Author, Refereed:

- 02/2022 "*Scanning disk rings and winds in CO at 0.01-10 au: a high-resolution M-band spectroscopy survey with IRTF-iSHELL*"  
Banzatti, Andrea; Abernathy, Kirsten M.; Brittain, Sean; Bosman, Arthur D.; Pontoppidan, Klaus M.; Boogert, Adwin; Jensen, Stanley; Carr, John; Najita, Joan; **Grant, Sierra**; Sigler, Rocio M.; Sanchez, Michael A.; Kern, Joshua; Rayner, John T.
- 05/2019 "*Using Multiwavelength Variability to Explore the Connection among X-Ray Emission, the Far-ultraviolet H $_2$  Bump, and Accretion in T Tauri Stars*"  
C. C. Espaillat, C. Robinson, **S. Grant**, M. Reynolds  
ApJ, 876, 121

**Non-Refereed:**.....

03/2014            *"A Month of Personal Transformation at Kitt Peak"*  
**Sierra L. Grant**  
 NOAO Newsletter, Issue 109, March 2014

**Accepted Observing Proposals**

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## As PI:.....

2021            NOEMA (13.5 hours, ranked "B", Co-PI)  
                   "Orion's hunting grounds: The first unbiased mass census of Herbig  
                   Ae/Be disks"  
                   **Sierra Grant**, Michiel R. Hogerheijde, Lucas Stapper, Ewine F. van  
                   Dishoeck, Sierk van Terwisga, Alice Booth

2021            VLT-CRIRES+ (1.4 hours, Science Verification, not observed)  
                   "Probing the impact of dust cavities on the gas distribution in  
                   intermediate-mass stars"  
                   **Sierra Grant**, Carlo Manara, Ewine van Dishoeck, Giulio Bettoni,  
                   Melissa McClure

2020            Gemini South Observatory (17 hours in 2020A, 7.7 hours in 2020B)  
                   "Accretion onto Intermediate-mass Stars"  
                   **Sierra Grant**, Catherine Espaillat, Sean Brittain, Nuria Calvet

2019            ALMA (Cycle 7, 2019.1.00951.S)  
                   "Characterizing Protoplanetary Disks in the Orion L1641 Region"  
                   **Sierra Grant**, Catherine Espaillat, Kyoung Hee Kim, Enrique Macías,  
                   Álvaro Ribas, Tom Megeath, Nuria Calvet, John Tobin

2019 & 2020    NASA Infrared Telescope Facility (3 half-nights each in 2019B and 2020A)  
                   "Accretion onto Intermediate-mass Stars"  
                   **Sierra Grant**, Catherine Espaillat, Sean Brittain, Nuria Calvet

2017 & 2018    Lowell Discovery Telescope, Lowell Observatory (10 half-nights)  
                   "Probing Gas and Dust in the Sites of Planet Formation"  
                   **Sierra Grant**, Catherine Espaillat

## As Co-I:.....

10/2017            *Hubble Space Telescope* (6 orbits) & *Chandra X-ray Observatory* (35ks) &  
                   VLA (9.6 hours)  
                   "Connecting Mass Accretion and Ejection in Pre-main Sequence Stars"  
                   Catherine Espaillat, Jesús Hernández, **Sierra Grant**, Enríque Macías,  
                   Mark Reynolds, Connor Robinson

10/2015            *Spitzer Space Telescope* (Proposal ID #12036)  
                   "Footprints of the Magnetosphere: the Star-Disk Connection in T Tauri  
                   Stars"  
                   Catherine Espaillat, **Sierra Grant**, Jesus Hernandez, Nuria Calvet  
                   Coordinated with the *Hubble Space Telescope* and the The Neil Gehrels  
                   *Swift* Observatory for simultaneous observations

## Affiliations and Outreach

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|-------------------|---|
| 11/2021 – Current | Planet Formation Witnesses and Probes: Transition Disks Research Unit |
| 09/2021 – Current | Inclusion, Diversity, and Equity in European Astronomy (IDEEA)        |
| 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        |

## Leadership

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|-------------------|---|
| 09/2018 – 08/2021 | Women as Leaders in Astronomy Organizer |
| 09/2018 – 08/2019 | Graduate Student Representative         |

## Mentored Students

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|-------------------|--|
| 10/2021 – Current | <b>Giulio Bettoni:</b> Giulio is a Leiden University Ph.D. student who is working with me at MPE in Garching. Giulio's focus is on chemistry in the inner regions of protoplanetary disks. |
| 06/2018 – 08/2019 | <b>Caleb Scott-Joseph:</b> Caleb was a high school student at Boston University Academy who I mentored to analyze high-resolution, near-infrared spectra of protoplanetary disks.          |

## Workshops

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| 12/2017 | JWST Proposal Planning Workshop, Pasadena, CA                      |
| 03/2016 | NRAO Live! ALMA Proposal Workshop at Boston University, Boston, MA |

## Teaching

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|-------------|---|
| Spring 2016 | AS 203: Principles of Astronomy II Teaching Assistant |
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