

# Charles J. Law – Curriculum Vitae

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## EDUCATION

<b>Ph.D., Astronomy and Astrophysics</b> Harvard University, Cambridge, MA Thesis: <i>Chemical Complexity at High Spatial Resolution during Star and Planet Formation</i> Advisor: Karin I. Öberg	2018 – Present
<b>M.A., Astronomy and Astrophysics</b> Harvard University, Cambridge, MA	May 2021
<b>B.A., Physics and Astrophysics</b> Secondary Concentration: Computer Science Magna Cum Laude with Highest Honors Harvard University, Cambridge, MA Thesis: <i>Carbon Chain Molecules Toward Embedded Low-Mass Protostars</i> Advisor: Karin I. Öberg	2013 – 2017

## RESEARCH INTERESTS

I am broadly interested in exploring chemical complexity in space, with a particular focus on (sub)millimeter interferometry. I use high spatial resolution observations to understand the chemistry and physics of the star and planet formation process, including toward low-mass and embedded protostars, massive young stellar objects, and protoplanetary disks.

## HONORS & AWARDS

• NSF Graduate Research Fellowship <i>Supports outstanding graduate students in NSF-supported science disciplines</i>	2019 – Present
• Honorable Mention, Chambliss Astronomy Achievement Award Student Prize	2020
• Smithsonian Astrophysical Observatory Research Fellowship	2017
• Leo Goldberg Prize in Astronomy, Harvard University <i>Departmental award for an exceptional undergraduate senior astronomy thesis</i>	2017
• Thomas Temple Hoopes Prize, Harvard University <i>College-wide award for an outstanding undergraduate senior thesis</i>	2017
• Phi Beta Kappa, Harvard University	2017
• Frederick Tarantino Memorial Scholarship Award, Universities Space Research Assoc. <i>National designation for astrophysics research potential</i>	2016
• Harvard College PRISE Research Fellowship	2016
• Detur Book Prize, Harvard University <i>Awarded to outstanding first-year students</i>	2014
• John Harvard Scholar, Harvard University <i>Awarded to top 5% of first-year students</i>	2014

## PUBLICATIONS

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Author of 31 publications (refereed or under review), including 8 as first author. A full listing of my publications can be found on [ADS](#).

### First Author

1. **Law, C.J.**, Loomis, R. A., et al. (+33 coauthors). Molecules with ALMA at Planet-forming Scales (MAPS) III. Characteristics of Radial Chemical Substructures, *ApJS*, accepted
2. **Law, C.J.**, Teague, R., et al. (+33 coauthors). Molecules with ALMA at Planet-forming Scales (MAPS) IV. Emission Surfaces and Vertical Distribution of Molecules, *ApJS*, accepted
3. **Law, C. J.**, Zhang, Q., Öberg, K. I., Galván-Madrid, R., Keto, E., Liu, H., Ho, P. T. P. 2021, [Subarcsecond Imaging of the Complex Organic Chemistry in Massive Star-Forming Region G10.6-0.4](#), *ApJ*, 909, 214
4. **Law, C. J.**, Milisavljevic, D., et al. (+10 coauthors). 2020, [Three-dimensional Kinematic Reconstruction of the Optically-Emitting, High-Velocity, Oxygen-Rich Ejecta of Supernova Remnant N132D](#), *ApJ*, 894, 73
5. **Law, C. J.**, Zhang, Q., Ricci, L., Petitpas, G., M. J. Jiménez-Donaire, Ueda, J., Lu, X., Dunham, M. M. 2018, [Submillimeter Array Observations of Extended CO \( \$J = 2 - 1\$ \) Emission in Interacting Galaxy NGC 3627](#), *ApJ*, 865, 17
6. **Law, C. J.**, Öberg, K. I., Bergner, J. B., Graninger, D. 2018, [Carbon Chain Molecules Toward Embedded Low-Mass Protostars](#), *ApJ*, 863, 88
7. **Law, C. J.**, Ricci, L., Andrews, S. M., Wilner, D. J., Qi, C. 2017, [An SMA Continuum Survey of Circumstellar Disks in the Serpens Star-Forming Region](#), *AJ*, 154, 255
8. **Law, C. J.**, Milisavljevic, D., et al. (+9 coauthors). 2017, [TRES Survey of Variable Diffuse Interstellar Bands](#), *MNRAS*, 470, 2835

### Co-Authored Publications

1. Sharda, P, et al. (incl. **Law, C. J.**). First extragalactic measurement of the turbulence driving parameter: ALMA observations of the star-forming region N159E in the Large Magellanic Cloud, submitted, [arXiv:2109.03983](#)
2. Anderson, A. R., et al. (incl. **Law, C. J.**). Protostellar and Protoplanetary Disk Masses in the Serpens-Aquila Region, submitted
3. Martín Doménech, R., et al. (incl. **Law, C. J.**). Hot corino chemistry in the Class I binary source Ser-emb 11, submitted
4. Öberg K. I., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) I. Program Overview and Highlights, *ApJS*, accepted
5. Czekala, I., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) II. CLEAN Strategies for Synthesizing Images of Molecular Line Emission in Protoplanetary Disks, *ApJS*, accepted
6. Zhang, K., Booth, A., **Law, C. J.**, et al. Molecules with ALMA at Planet-forming Scales (MAPS) V. CO Gas Distributions, *ApJS*, accepted
7. Guzmán, V. V., Bergner, J. B., **Law, C. J.**, et al. Molecules with ALMA at Planet-forming Scales (MAPS) VI. Distribution of the Small Organics HCN, C<sub>2</sub>H, and H<sub>2</sub>CO, *ApJS*, accepted

8. Bosman, A. D., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) VII. Substellar O/H and C/H and Superstellar C/O in Planet-feeding Gas, *ApJS*, accepted
9. Alarcón, F., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) VIII. CO Gap in AS 209 – Gas Depletion or Chemical Processing?, *ApJS*, accepted
10. Ilee, J. D., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) IX. Distribution and Properties of the Large Organic Molecules HC<sub>3</sub>N, CH<sub>3</sub>CN, and c-C<sub>3</sub>H<sub>2</sub>, *ApJS*, accepted
11. Cataldi, G., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) X. Studying Deuteration at High Angular Resolution toward Protoplanetary Disks, *ApJS*, accepted
12. Bergner, J. B., Öberg, K. I., Guzmán, V. V., **Law, C. J.**, et al. Molecules with ALMA at Planet-forming Scales (MAPS) XI. CN and HCN as Tracers of Photochemistry in Disks, *ApJS*, accepted
13. Le Gal, R., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XII. Inferring the C/O and S/H Ratios in Protoplanetary Disks with Sulfur Molecules, *ApJS*, accepted
14. Aikawa, Y., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XIII. HCO<sup>+</sup> and Disk Ionization Structure, *ApJS*, accepted
15. Sierra, A., Pérez, L. M., Zhang, K., **Law, C. J.**, et al. Molecules with ALMA at Planet-forming Scales (MAPS) XIV. Revealing Disk Substructures in Multiwavelength Continuum Emission, *ApJS*, accepted
16. Bosman, A. D., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XV. Tracing Protoplanetary Disk Structure within 20 au, *ApJS*, accepted
17. Booth, A., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XVI. Characterizing the Impact of the Molecular wind on the Evolution of the HD 163296 System, *ApJS*, accepted
18. Calahan, J., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XVII. Determining the 2D Thermal Structure of the HD 163296 Disk, *ApJS*, accepted
19. Teague, R., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XVIII. Kinematic Substructure in the Disks of HD 163296 and MWC 480, *ApJS*, accepted
20. Huang, J., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XIX. Spiral Arms, a Tail, and Diffuse Structures Traced by CO around the GM Aur Disk, *ApJS*, accepted
21. Schwarz, K., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XX. The Massive Disk Around GM Aurigae, *ApJS*, accepted
22. Sano, H., et al. (incl. **Law, C. J.**). 2020, [ALMA CO Observations of Gamma-Ray Supernova Remnant N132D in the Large Magellanic Cloud: Possible Evidence for Shocked Molecular Clouds Illuminated by Cosmic-Ray Protons](#), *ApJ*, 902, 53
23. Le Gal, R., et al. (incl. **Law, C. J.**). 2020, [A 3mm chemical exploration of small organics in Class I YSOs](#) *ApJ*, 898, 131

## PRESS

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| 1. <a href="#">INAF Bulletin</a> on the 3D reconstruction of SNR N132D | April 2020   |
| 2. <a href="#">SMA Newsletter</a> on SMA observations of NGC 3627      | January 2019 |

## TALKS

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I have given a total of 23 talks, including 5 invited talks and 5 public talks.

1. Seminar, Exoplanet Pizza Lunch, CfA [*expected*] September 2021
2. Contributed, Chemical processes in Solar-type star forming regions, Turin, Italy [*expected*] September 2021
3. **Invited**, SSP Coffee Talk July 2021
4. Contributed, Emerging Researchers in Exoplanet Science May 2021
5. **Invited**, Origins Seminar, University of Arizona May 2021
6. Contributed, Space Telescope, 2021 Spring Symposium April 2021
7. Contributed, Five years after HL Tau: a new era in planet formation December 2020
8. Contributed, Harvard-Heidelberg Star Formation Workshop December 2020
9. Contributed, Astrochemical Frontiers June 2020
10. *Public Talk*, North Shore Amateur Astronomy Club June 2020
11. *Public Talk*, Gloucester Area Astronomy Club May 2020
12. *Public Talk*, Beacon Hill Seminar March 2020
13. Seminar, SMA Talk, CfA February 2020
14. Contributed, New England Star Formation Meeting, UConn January 2020
15. Contributed, 235<sup>th</sup> AAS, Honolulu, HI January 2020
16. *Public Talk*, Union County College/AAI, NJ December 2019
17. Contributed, Science with the Submillimeter Array: Present and Future October 2019
18. Contributed, ISMS, 74<sup>th</sup>, Champaign-Urbana, IL June 2019
19. Contributed, SNRs II, Chania, Crete, Greece June 2019
20. Seminar, Exoplanet Pizza Lunch, CfA May 2019
21. **Invited**, ALMA Community Day, MIT April 2019
22. **Invited**, ALMA Community Day, CfA April 2019
23. Seminar, High Energy Phenomena Seminar, CfA February 2019
24. **Invited**, SMA Advisory Committee Meeting, CfA July 2018
25. *Public Talk*, Gloucester Area Astronomy Club September 2018

## CONFERENCE CONTRIBUTIONS

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Author of 11 conference contributions, including 7 as primary contributor.

1. Milisavljevic, D. (+5 coauthors; incl. **Law, C. J.**), “Visualization and Collaborative Exploration of Complex Multi-dimensional Data Among Distant Individuals using Virtual Reality,” American Astronomical Society, Meeting #237 (Poster)
2. Plucinsky, P. P. on behalf of N132D Legacy Team (incl. **Law, C. J.**), “A Chandra Legacy Observation of N132D,” American Astronomical Society, Meeting #235 (Poster)
3. Milisavljevic, D., **Law, C. J.**, (+8 coauthors) “Three-Dimensional Kinematic Reconstruction of the Optically-Emitting, High-Velocity, Oxygen-Rich Ejecta of Supernova Remnant N132D,” American Astronomical Society, Meeting #235 (Poster)

4. **Law, C. J.**, Zhang, Q., Öberg, K., Galván-Madrid, R., Keto, E., Ho, P., Liu, H. 2020, “An ALMA Sub-arcsecond View of Outflows, Ionized Gas, and Spatially-Extended Complex Organic Chemistry in OB Cluster-forming Region G10.6-0.4,” ALMA Special Session at American Astronomical Society, Meeting #235 (Poster)
5. Plucinsky, P. P. on behalf of the N132D Legacy Team (incl. **Law, C. J.**), “A Chandra Legacy Observation of the LMC SNR N132D,” 20 Years of Chandra Science Symposium (Poster)
6. **Law, C. J.**, Zhang, Q., Öberg, K., Galván-Madrid, R., Keto, E., Ho, P., Liu, H. 2019, “Sub-arcsecond Imaging of the Complex Organic Chemistry in Massive Star-forming region G10.6-0.4,” Harvard-Heidelberg Star Formation Workshop 2019: Linking Observations and Simulations (Intro Talk & Poster)
7. **Law, C. J.**, Zhang, Q., Öberg, K., Loomis, R., Galván-Madrid, R., Keto, E., Ho, P., Liu, H. 2019, “ALMA Observations of Nitrile Chemistry in the Massive Star-forming Region G10.6-0.4,” American Astronomical Society, Meeting #233 (Poster)
8. **Law, C. J.**, Ricci, L., Andrews, S. M., Wilner, D. J., Qi, C. 2018, “SMA Continuum Survey of Circumstellar Disks in Serpens,” SPF2 (Poster)
9. **Law, C. J.**, Öberg, K. I., Bergner, J. B., Graninger, D. 2017, “Carbon Chains Toward Embedded Low-Mass Protostars,” Harvard-Heidelberg Star Formation Workshop 2017: Star Formation Across the Universe (Intro Talk & Poster)
10. **Law, C. J.**, Ricci, L., Andrews, S. M., Wilner, D. J., Qi, C. 2017, “SMA Continuum Survey of Circumstellar Disks in Serpens,” American Astronomical Society, Meeting #230 (Poster)
11. **Law, C. J.**, Milisavljevic, D., Crabtree, K., Johansen, S., Patnaude, D. 2017, “TRES Survey of Variable Diffuse Interstellar Bands,” American Astronomical Society, Meeting #229 (Poster)

## **OBSERVING EXPERIENCE & PROPOSALS**

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PI of 8 programs and Co-I on an additional 30 programs for access to observing facilities such as the SMA, 6.5m Magellan telescope, VLA, ALMA, HST, Chandra, and JWST.

### **PI**

1. Connecting scaling laws between exoplanets and young disks  
Submillimeter Array 2021A-S003 *4 B-ranked Tracks*
2. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D  
Magellan Baade 6.5m, FIRE, 2021B *3 Nights*
3. Connecting scaling laws between exoplanets and young disks  
Submillimeter Array 2020A-S028 *4 B-ranked Tracks\**
4. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D  
Magellan Baade 6.5m, FIRE, 2020B *4 Nights\**
5. Searching for Ionized Accretion Flows around 0.1 pc Scale Clusters with O-Type Stars  
ALMA, Cycle 7 *14.8 hours, C-ranked\**
6. Jet-like, Si-rich ejecta in O-rich LMC Supernova Remnant N132D  
Magellan Baade 6.5m, FIRE, 2019B *3 Nights*
7. Formation of O Stars by Accretion of Ionized Gas  
Very Large Array 2019A-228 *11 hours, A-ranked*

8. Searching for Ionized Accretion Flows around 0.1 pc Scale Clusters with O-Type Stars

Submillimeter Array 2018B+2019A

8 B-ranked Tracks

*\*not observed due to pandemic-related observatory closures*

**Co-I**

1. Benchmarking  $^{13}\text{C}$  fractionation with  $\text{HC}_3\text{N}$  in protoplanetary disks

ALMA, Cycle 8 (PI: R. Loomis)

C-ranked

2. A snowline origin for the substructures in the Class I disk GY 91?

ALMA, Cycle 8 (PI: J. Huang)

B-ranked

3. Quantifying the neutral carbon content in HD163296, a planet-forming disk

ALMA, Cycle 8 (PI: F. Alarcón)

C-ranked

4. Spatially resolved observations of the  $^{14}\text{N}/^{15}\text{N}$  isotopic ratio in Herbig disks

ALMA, Cycle 8 (PI: V. Guzmán)

C-ranked

5. A survey of  $\text{H}_2\text{CO}$  lines in protoplanetary disks

ALMA, Cycle 8 (PI: V. Guzmán)

B-ranked

6. A unique gas tracer of pebble drift in protoplanetary disks

ALMA, Cycle 8 (PI: K. Zhang)

B-ranked

7. Evaporating ices in planet-forming disks

ALMA, Cycle 8 (PI: A. Booth)

B-ranked

8. High resolution observations of deuterated hydrocarbons in protoplanetary disks

ALMA, Cycle 8 (PI: Y. Yamato)

B-ranked

9. A Chemistry Survey of Protoplanetary Disks in Binary Systems

ALMA, Cycle 8 (PI: F. Long)

B-ranked

10. Measuring The Expansion of the SNR N132D in X-rays

50 ks (GO) + 50 ks (GTO)

Chandra, HRC, Cycle 23 (PI: X. Long)

11. Precision Tomography of the LMC Supernova Remnant N132D using MUSE

12 hours

VLT, MUSE, P108, Priority A (PI: D. Milisavljević)

12. Mapping the Delivery of Material to a Planet-forming Disk

GBT, 21B-065, Priority B+ (PI: J. Huang)

11.75 hours

13. Detecting a Young 2 Jupiter Mass Planet Embedded in the Disk of HD 163296

JWST, MIRI/Coronagraphy, Cycle 1 GO, ID: 2153 (PI: G. Cugno)

7.8 hours

14. The Chemistry of Planet Formation: A JWST-ALMA Survey of 4 Planet-Forming Disks

JWST, MIRI/MRS, Cycle 1 GO, ID: 2025 (PI: K. Öberg)

12.8 hours

15. Distinguishing between envelope and embedded disk chemistry of Class I YSOs

NOEMA Winter 2020, W20AJ (PI: R. Le Gal)

B-ranked

16. A Unique Opportunity to Measure the Continuum Optical Depth of a Protoplanetary Disk via Background Illumination

IRAM 30m 2020A, No. 140-20 (PI: I. Czekala)

A-ranked

17. Sulfur Chemistry in Planet-forming Disks

Submillimeter Array 2020A-S018 (PI: R. Le Gal)

5 A-ranked Tracks

18. Distinguishing between envelope and embedded disk chemistry of Class I YSOs

NOEMA Summer 2020, S20AH (PI: R. Le Gal)	B-ranked
19. Resolving ionized accretion flow toward most massive O-type stars ALMA Cycle 7 (PI: Q. Zhang)	B-ranked
20. A Serpens disk survey: exploring planet formation in an unexplored region ALMA Cycle 7 (PI: N. van der Marel)	B-ranked
21. The Center of Expansion and Age of Supernova Remnant N132D HST Cycle 27, 15818 (PI: D. Milisavljević)	3 Orbits
22. Exploratory survey of Class I YSO chemistry IRAM 30m 2019A, No. 014-19 (PI: R. Le Gal)	B-ranked
23. Variable Diffuse Interstellar Bands Shane 3m 2019A (PI: K. Crabtree)	5 Nights
24. Variable Diffuse Interstellar Bands Gemini 2019A (PI: D. Milisavljević)	5 hours
25. Searching for Ionized Accretion Flows around the Cluster with O-Type Stars Very Large Array, 2019A (PI: Q. Zhang)	B-ranked
26. A Pilot Wideband Chemical Survey of Class I Protostellar Disks Submillimeter Array 2018B+2019A (PI: J. Huang)	4 A- + 4 B-ranked Tracks
27. The Chemistry of Planet Formation ALMA Cycle 6, Large Program (PI: K. Öberg)	A-ranked; 131 hours
28. Variable Diffuse Interstellar Bands Shane 3m 2018B (PI: K. Crabtree)	5 Nights
29. WIYN Survey of Variable Diffuse Interstellar Bands WIYN 3.5m 2018A (PI: D. Milisavljević)	1.5 Nights
30. Hectochelle Survey of Cygnus OB2 MMT 6.5 m 2016B (PI: D. Milisavljević)	0.5 Nights

### Observing Experience:

- SMA, 15 nights (July 14 – 18, 2016; Dec. 14 – 18, 2017; June 21 – 25, 2018)
- FIRE+Baade, 6.5m Magellan telescope, 2.5 nights (Dec. 13 – 15, 2019)
- MMT, 1 night [*remote*] (Dec. 2, 16, 2016)

### Funding:

- Harvard Data Science Initiative Research Fund, Regularized Maximum Likelihood Imaging: A New Method for Detecting Planets (\$9,700; Collaborator, PI: R. Teague)
- NRAO Student Observing Support, VLA 2019A, 2019 (\$33,601; Advisor: Q. Zhang)
- ALMA Student Observing Support, ALMA Cycle 4, 2016 (\$9,000; Advisor: Q. Zhang)

### COLLABORATIONS

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**Molecules with ALMA at Planet-forming Scales (MAPS)** 2018 – Present  
 PI: Karin I. Öberg; co-PIs: Yuri Aikawa, Edwin A. Bergin, Viviana V. Guzmán, Catherine Walsh  
 ALMA Cycle 6 Large Program to comprehensively survey the chemistry of five protoplanetary disks at high spatial resolution (~15 au)

## N132D Chandra Legacy Team

2019 – Present

PI: Paul P. Plucinsky

Chandra Cycle 20 Large Program to obtain legacy observations of N132D at unprecedented depth/integration time (900 ks)

## TEACHING

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- Python Workshop instructor, [SAO Latino Initiative Program](#) Aug. 16, 2021  
“Scientific Computing with SciPy”
- Co-Instructor, Introduction to Scientific Programming in Python (CSCI P-14320). Summer 2021
- TF, Interstellar Medium and Star Formation (AY203). Harvard University. Spring 2021
- TF, Introduction to Scientific Programming in Python (CSCI P-14320). Summer 2019, 2020  
Harvard Summer School, Pre-College Program
- TF, Stellar and Planetary Astronomy (AY16). Harvard University. Spring 2020
- TF, Physics I (Lab): Mechanics, Elasticity, Fluids, and Diffusion (PHYS E-1axl). Fall 2017  
Harvard Extension School.

## OUTREACH

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- Course Coordinator, Beacon Hill Seminar Spring 2021, Fall 2021 [*expected*]  
Organized the “[Unveiling the Cosmos](#)” weekly seminar; featured in community newspaper  
[“Harvard-Smithsonian Center makes impact with outreach to lifelong learners” in [Wicked Local](#)]
- Astronomy Advisor to Harvard Undergraduate Science Olympiad 2018 – 2020  
Served multiple roles including Astronomy Rules-Writer (Spring 2020) and Event Supervisor (Fall 2018)
- Astrobites Contributing Author Jan 2019 – Present  
Author and editor of the “reader’s digest” version of recent astronomy papers with a wide audience.  
A full list of authored posts (12) can be found [here](#); three of which were featured on AAS Nova:  
[Salt and Hot Water around Massive Protostars](#)  
[Spectral Line Survey Reveals New Molecules in Two Protoplanetary Disks](#)  
[A New Window into Prebiotic Nitrogen Chemistry in Protoplanetary Disks](#)
- AAS Astronomy Ambassador Jan 2019 – Present
- Presenter, Flipped Science Fair, John F. Kennedy School June 2018, May 2019
- Speaker, [Science Research Mentoring Program](#), Cambridge Rindge and Latin School Mar 2018  
Led a hands-on astronomy lecture and activity about [molecules in space](#)
- Observatory Night Volunteer, CfA Fall 2017 – Present
- Seminar Leader, Harvard Summit for Young Leaders in China Aug 2017  
Designed course curriculum and taught a weeklong astronomy seminar to  
Chinese high school students in Shanghai; handled aspects of residential life

## PROFESSIONAL SERVICE & LEADERSHIP

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- Referee: A&A, A&A Letters, ApJ, ApJS 2018 – Present
- Junior Member, American Astronomical Society Apr 2017 – Present



CfA Star Formation Journal Club Series Co-Organizer [ <i>expected</i> ]	Fall 2021 – Present
CfA APS-IDEA Committee Member	2021 – Present
Harvard Astronomy Department Peer Mentor	2021 – Present
Co-Organizer, Grad School Visitation Days	Spring 2020
Co-Organizer, Student-Faculty Lunch Series	Spring 2020
Member, Astronomical Society of the Pacific	Jan 2019 – Jan 2020
Treasurer & Founding Member, Harvard Astrophysical Society	Nov 2015 – May 2017

## MENTORING

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Sage Crystian, Harvard Undergraduate	Summer 2021
Co-advised with K. Öberg; summer research project mapping vertical gas structures in protoplanetary disks using ALMA data	
Prabidhik KC, Harvard Undergraduate	Spring 2020 – Present
Co-advised with Q. Zhang; independent research project on the chemistry of MYSOs and UC HII regions using SMA data	
Devin Sullivan, Harvard Undergraduate	Fall 2019
Co-advised with K. Öberg; <a href="#">Junior Thesis</a> (AY98) on the distribution of HCN gas in protoplanetary disks using ALMA data	