

Charles J. Law – Curriculum Vitae

Center for Astrophysics | Harvard & Smithsonian
60 Garden Street, Cambridge, MA 02138, USA
charles.law@cfa.harvard.edu | [claw-astro.github.io](https://github.com/claw-astro)
ORCID iD: 0000-0003-1413-1776 | 724-493-0763

EDUCATION

Ph.D., Astronomy and Astrophysics Harvard University, Cambridge, MA Thesis: <i>Chemical Complexity at High Spatial Resolution during Star and Planet Formation</i> Advisor: Karin I. Öberg	2018 – Present
M.A., Astronomy and Astrophysics Harvard University, Cambridge, MA	May 2021
B.A., Physics and Astrophysics 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

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*, in press, [arXiv:2109.06210](#)
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*, in press, [arXiv:2109.06217](#)
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, accepted
4. Öberg K. I., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) I. Program Overview and Highlights, *ApJS*, in press, [arXiv:2109.06268](#)
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*, in press, [arXiv:2109.06188](#)
6. Zhang, K., Booth, A., **Law, C. J.**, et al. Molecules with ALMA at Planet-forming Scales (MAPS) V. CO Gas Distributions, *ApJS*, in press, [arXiv:2109.06233](#)

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, C₂H, and H₂CO, *ApJS*, in press, [arXiv:2109.06391](#)
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*, in press, [arXiv:2109.06221](#)
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*, in press, [arXiv:2109.06263](#)
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 HC₃N, CH₃CN, and c-C₃H₂, *ApJS*, in press, [arXiv:2109.06319](#)
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*, in press, [arXiv:2109.06462](#)
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*, in press, [arXiv:2109.06694](#)
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*, in press, [arXiv:2109.06286](#)
14. Aikawa, Y., et al. (incl. **Law, C. J.**). Molecules with ALMA at Planet-forming Scales (MAPS) XIII. HCO⁺ and Disk Ionization Structure, *ApJS*, in press, [arXiv:2109.06419](#)
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*, in press, [arXiv:2109.06433](#)
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*, in press, [arXiv:2109.06223](#)
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*, in press, [arXiv:2109.06586](#)
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*, in press, [arXiv:2109.06202](#)
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*, in press, [arXiv:2109.06218](#)
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*, in press, [arXiv:2109.06224](#)
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*, in press, [arXiv:2109.06228](#)
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

1. [INAF Bulletin](#) on the 3D reconstruction of SNR N132D April 2020
2. [SMA Newsletter](#) on SMA observations of NGC 3627 January 2019

TALKS

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, 235th 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, 74th, 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

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

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

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| 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

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| 1. Benchmarking ^{13}C fractionation with HC_3N 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 H_2CO 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
Chandra, HRC, Cycle 23 (PI: X. Long) | 50 ks (GO) + 50 ks (GTO) |
| 11. Precision Tomography of the LMC Supernova Remnant N132D using MUSE
VLT, MUSE, P108, Priority A (PI: D. Milisavljević) | 12 hours |
| 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

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

- 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

- 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

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

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; Junior Thesis (AY98) on the distribution of HCN gas in protoplanetary disks using ALMA data	