Charles J. Law – Curriculum Vitae

University of Virginia, Department of Astronomy
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PROFESSIONAL APPOINTMENTS

NASA Hubble Fellowship Program (NHFP) Sagan Fellow — Sept 2023 – Present
University of Virginia, Department of Astronomy (Charlottesville, VA)

Postdoctoral Researcher — June 2023 – July 2023
Center for Astrophysics | Harvard & Smithsonian (Cambridge, MA)

EDUCATION

Ph.D., Astronomy and Astrophysics (Harvard University, Cambridge, MA) — 2018 – 2023
Thesis: Zooming in on the Chemistry of Star and Planet Formation — Advisors: Prof. Karin Öberg & Dr. Qizhou Zhang

M.A., Astronomy and Astrophysics (Harvard University, Cambridge, MA) — 2021

B.A., Physics and Astrophysics (Harvard University, Cambridge, MA) — 2013 – 2017
Thesis: Carbon Chain Molecules Toward Embedded Low-Mass Protostars — Advisor: Prof. Karin Öberg

RESEARCH INTERESTS

Planet Formation, Protoplanetary Disks, Exoplanets, Interstellar Medium, Molecular Astrophysics, Radio Interferometry

AWARDS

IAU Division H: Interstellar Matter and Local Universe, 2023 PhD Thesis Prize	2024
NASA Hubble Fellowship Program, Sagan Fellowship	2023 – Present
AAS Rodger Doxsey Travel Prize (241st AAS meeting)	2023
ALMA Ambassador	2022
NSF Graduate Research Fellowship	2019
Smithsonian Astrophysical Observatory Research Fellowship	2017
Leo Goldberg Prize in Astronomy (Harvard University)	2017
Thomas Temple Hoopes Prize (Harvard University)	2017
Phi Beta Kappa (Harvard University)	2017
USRA Frederick Tarantino Memorial Scholarship Award	2016
PRISE Undergraduate Research Fellowship (Harvard University)	2016
Detur Book Prize (Harvard University)	2014
John Harvard Scholar (Harvard University)	2014

PUBLICATIONS

Author of **83 publications** (published / under review). See a full listing at the end of CV and ADS library for more details.

TELESCOPE OBSERVING & PROPOSALS

PI of **23 programs** – *with JWST, ALMA, VLA, SMT, SMA, Magellan, LBT (list at end of CV)* – & Co-I on an additional **93 programs**.

Total Awarded Time: **ALMA** (1110 hrs), **ACA** (225 hrs), **SMA** (824 hrs), **VLA** (224 hrs), **VLBA** (72 hrs), **GBT** (14 hrs), **VLT** (53 hrs), **IRAM 30m** (50 hrs), **NOEMA** (64 hrs), **JWST** (90 hrs), **Chandra** (260 ks), **HST** (3 orbits), **SMT** (68 hrs), **Shane** (10 nights), **Gemini** (5 hrs), **WIYN** (1.5 nights), **MMT** (0.5 nights), **HET** (7 hrs), **LBT** (8 hrs), **Magellan** (12.5 nights)

Observing Experience: **SMT** (10m single dish | 2023 – 2024): 17 nights; **Magellan** (6.5m | 2019, 2021, 2022): 7.5 nights
SMA (sub-mm interferometer | 2016 – 2018): 15 nights; **MMT** (6.5m | 2016): 1 night

Major Collaborations:

ALMA Large Programs	: CHEER, DiskStrat (Cycle 11), DECO (Cycle 9), MAPS (Cycle 6)
SMA Large Scale Program	: SMA-SPEC (2022B)
Chandra Large Program	: N132D Legacy Team (Cycle 20)
MORYSEF*, Multi-Telescope	: Chandra + JWST + ALMA + VLBA + HET (multi-cycle / coordinated)

*Multi-observatory Study of Young Stellar Energetic Flares

TEACHING

Instructor

Introduction to Scientific Programming in Python (Harvard Pre-College Program)	Summer 2021, 2022, 2023
Scientific Computing with SciPy, Python Workshop (SAO Latino Initiative Program)	Summer 2021, 2022, 2023
Unveiling the Cosmos (Beacon Hill Seminars)	Spring, Fall 2021

Guest Lectures

Astronomy 1210: Introduction to the Sky and the Solar System (UVA)	Apr 2025
Astronomy 1610: Introduction to Astronomical Research for Potential Astronomy Majors (UVA)	Apr 2025
Astronomy 201: Descriptive Astronomy (Harry S Truman College, City Colleges of Chicago)	Oct 2023, Apr 2024

Teaching Fellow

Interstellar Medium and Star Formation (Graduate, Harvard University)	Spring 2021
Stellar and Planetary Astronomy (Undergraduate, Harvard University)	Spring 2020
Introduction to Scientific Programming in Python (Harvard Pre-College Program)	Summer 2019, 2020
Physics I (Lab): Mechanics, Elasticity, Fluids, and Diffusion (Undergraduate, Harvard University)	Fall 2017

Pedagogy Training & Teaching Awards

Creating Inclusive and Accessible Learning Faculty Community (University of Virginia)	Spring 2024
Science Education Undergraduate Mentoring Workshop Series (Harvard University)	Spring 2022
Derek Bok Teaching Certificate (Harvard University)	2021
Derek Bok Certificate of Excellence and Distinction in Teaching (Harvard University)	Spring 2021

LEADERSHIP

Working Group Chair, Shapley Lecture Series, AAS Education Committee	2025 – Present
Co-Organizer, Astronomy Mentoring Program for Upcoming Postdocs (AMP-UP)	2024 – Present
Subcommittee Chair, AAS Education Committee (Outreach, Community Engagement & Informal Education)	2024 – 2025
Postdoc Representative (UVA)	2024 – 2025
Co-Organizer, Journal Club (UVA)	2024 – 2025
Co-Organizer, Postdoc Orientation & Symposium (UVA)	Fall 2024
Workshop Leader, ALMA data reduction workshop (IAU meeting, Traverse City, MI)	July 2023
Organizer, ALMA Data Reduction Workshop (CfA)	Fall 2022
Co-Organizer, CfA Star Formation Journal Club	2022 – 2023
Member, CfA APS-IDEA, Accessibility Subcommittee	2021 – 2023
Peer Mentor, Harvard Astronomy Department	2021 – 2022
Co-Organizer, Graduate School Visitation Days (Harvard)	Spring 2020
Co-Organizer, Student-Faculty Lunch Series (Harvard)	Spring 2020

SERVICE

Referee (A&A, A&A Letters, ApJ, ApJL, ApJS)	2018 – Present
External panelist, HST Time Allocation Committee / Planets & Planet Formation, Cycle [*redacted]	202*
Member, AAS Education Committee	2024 – Present
Reviewer, NRAO/GBO, Science Review Panel / ISM	2024 – Present
Organizing Volunteer, AAS Chambliss Competition (2x)	2025
AAS Chambliss Competition Poster Judge (3x)	2022 – 2024
Editor, BAAS Solar Eclipse Special Issue	Spring, Fall 2024
SOC, NHFP Symposium (Cambridge, MA)	2023
Poster Judge, National Collegiate Research Conference	Jan 2023
Reviewer, ALMA Archival Student Observing Support awards	Spring 2022

OUTREACH

Subject Matter Expert, NASA Community College Network	2022 – Present

AAS Astronomy Ambassador	2019 – Present
Local School Visits, IAU GA, Cape Town, South Africa	Aug 2024
Guest, Down to Earth with Terry Virts, Podcast	Feb 2022
Subject Matter Expert, NASA JWST Community Events	2021 – 2022
Contributing Author, astrobites [link]	2018 – 2020
Astronomy Advisor, Harvard Undergraduate Science Olympiad	2018 – 2020
Volunteer, CfA Public Observatory Nights	2017 – 2020
Presenter, Flipped Science Fair, John F. Kennedy School	June 2018, May 2019

MENTORING

I have served as a mentor to **16 students** for independent research projects and mentorship-focused programs.

Research

— Shantanu Parmar (Marwadi University, India, Undergraduate)	Spring 2025 – Present
— Cole Wampler (NRAO, Data Analyst)	Spring 2025 – Present
— Deryl Long (UVA, Graduate)	Fall 2024 – Present
— Kyle Gresko (UVA, Undergraduate Senior Thesis) Now a PhD student at University of Texas at San Antonio / Southwest Research Institute	Summer 2024 – Present
— TJ Maher (UVA, Undergraduate Senior Thesis) Now a PhD student at the University of Miami	Spring 2024 – Fall 2024
— Arielle Frommer (Harvard, Undergraduate) Now a Predoctoral Fellow at Leiden Observatory	Summer 2022 – Spring 2023
— Sarai Rankin (Morgan State, SAO REU, Undergraduate) Now a PhD student at Harvard University	Summer 2022
— Sage Crystian (Harvard, Undergraduate)	Summer 2021
— Prabidhik KC (Harvard, Undergraduate) Now a PhD student at the University of Chicago	Spring 2020 – Spring 2022
— Devin Sullivan (Harvard, Undergraduate Junior Thesis / co-supervised with K. Öberg) Now a PhD student at Boston University	Fall 2019

Non-Research

— Nazar Budaiev (AMP-UP, University of Florida, Graduate)	Fall 2025 – Present
— Sheila Sagear (AMP-UP, University of Florida, Graduate)	Fall 2025 – Present
— Charlie Mpetha (AMP-UP, University of Edinburgh, Graduate) Now a NASA Postdoctoral Program (NPP) Fellow at Goddard	Fall 2024 – Spring 2025
— Rayna Rampalli (AMP-UP, Dartmouth, Graduate)	Fall 2024 – Spring 2025
— Everett McArthur (APS NMC, KIPAC, Pre-Doctoral Student) Now a PhD student at the Ohio State University	Spring 2024
— Stephen DiKerby (AMP-UP, Penn State, Graduate) Now a postdoc at Michigan State University	Fall 2023 – Spring 2024

SELECTED TALKS

I have given over **75 talks**, including *15+ public talks* (see a full listing here).

Seminars, Colloquium, and Invited

University of Massachusetts Dartmouth, Astronomy Seminar (Dartmouth, MA)	Oct 2025
University of Maryland, Astronomy Colloquium (College Park, MD)	Feb 2025
Symposium on Next Generation Astrochemistry (Tokyo, Japan)	Oct 2024
UVA-NRAO Joint Colloquium (Charlottesville, VA)	Oct 2024
Carnegie Earth & Planets Laboratory (Washington, D.C.)	Sept 2024
2023 PhD Prize Talk, Division H Days, IAU GA (Cape Town, South Africa)	Aug 2024
Harlow Shapley Lecture Series (Chattanooga State Community College, TN)	Apr 2024
Celebrating 30 Years of Protoplanetary Disk Chemistry (Schloss Ringberg, Germany)	Feb 2024
Leiden Astrochemistry Seminar (Leiden, The Netherlands)	Sept 2022

Conference Contributed

Extreme Solar Systems V (Christchurch, New Zealand)	Mar 2024
Kavli-IAU Astrochemistry Symposium (Traverse City, MI)	July 2023
From Clouds to Planets II (Berlin, Germany)	Oct 2022
Science with the SMA: Present and Future (Taipei, Taiwan)	Oct 2019

PUBLICATIONS

Statistics from ADS: 83 papers (published / under review), 16 as first author; significant student mentorship marked in red
2345 citations (486 first-author citations), h-index = 28, ORCID: 0000-0003-1413-1776.

First Author

1. **Law, C. J.**, Le Gal, R., Öberg, K. I., et al., 2025. subm.
   "A Submillimeter Survey of CS Excitation in Protoplanetary Disks: Evidence of X-ray-Driven Sulfur Chemistry"
2. **Law, C. J.**, Le Gal, R., Yamato, Y., et al., 2025. ApJ, 985, 84 [link]
   "A Multi-line Analysis of the Distribution and Excitation of CS and H_2CS in the HD 163296 Disk"
3. **Law, C. J.**, Zhang, Q., Frommer, A. C., et al., 2025. ApJS, 276, 54 [link]
   "A Wideband Chemical Survey of Massive Star-forming Regions at Subarcsecond Resolution with the Submillimeter Array"
4. **Law, C. J.**, Benisty, M., Facchini S., et al., 2024. ApJ, 964, 190 [link]
   "Mapping the Vertical Gas Structure of the Planet-hosting PDS 70 Disk"
5. **Law, C. J.**, Alarcón, F., Cleeves, L. I., et al., 2023. ApJL, 959, L27 [link]
   "C I Traces the Disk Atmosphere in the IM Lup Protoplanetary Disk"
6. **Law, C. J.**, Booth, A. S., & Öberg, K. I. 2023. ApJL, 952, L19 [link]
   "SO and SiS Emission Tracing an Embedded Planet and Compact ^{12}CO and ^{13}CO Counterparts in the HD 169142 Disk"
7. **Law, C. J.**, Teague, R., Öberg, K. I., et al., 2023. ApJ, 948, 60 [link]
   "Mapping Protoplanetary Disk Vertical Structure with CO Isotopologue Line Emission"
8. **Law, C. J.**, Crystian, S., Teague, R., et al., 2022. ApJ, 932, 114 [link]
   "CO Line Emission Surfaces and Vertical Structure in Mid-Inclination Protoplanetary Disks"
9. **Law, C. J.**, Loomis, R. A., Teague, R., et al., 2021. ApJS, 257, 3 [link]
   "MAPS. III. Characteristics of Radial Chemical Substructures"
10. **Law, C. J.**, Teague, R., Loomis, R. A., et al., 2021. ApJS, 257, 4 [link]
    "MAPS. IV. Emission Surfaces and Vertical Distribution of Molecules"
11. **Law, C. J.**, Zhang, Q., Öberg, K. I., et al., 2021. ApJ, 909, 214 [link]
    "Subarcsecond Imaging of the Complex Organic Chemistry in Massive Star-Forming Region G10.6-0.4"
12. **Law, C. J.**, Milisavljevic, D., Patnaude, D. J., et al., 2020. ApJ, 894, 73 [link]
    "3D Kinematic Reconstruction of the Optically-Emitting, High-Velocity, Oxygen-Rich Ejecta of Supernova Remnant N132D"
13. **Law, C. J.**, Zhang, Q., Ricci, L., et al., 2018. ApJ, 865, 17 [link]
    "Submillimeter Array Observations of Extended CO (J = 2 – 1) Emission in Interacting Galaxy NGC 3627"
14. **Law, C. J.**, Öberg, K. I., Bergner, J. B., et al., 2018. ApJ, 863, 88 [link]
    "Carbon Chain Molecules Toward Embedded Low-Mass Protostars"
15. **Law, C. J.**, Ricci, L., Andrews, S. M., et al., 2017. AJ, 154, 255 [link]
    "An SMA Continuum Survey of Circumstellar Disks in the Serpens Star-Forming Region"
16. **Law, C. J.**, Milisavljevic, D., Crabtree, K. N., et al., 2017. MNRAS, 470, 3 [link]
    "TRES Survey of Variable Diffuse Interstellar Bands"

Second or Third Author

1. Gresko, K., **Law, C. J.**, Long, D. E., et al., 2025. ApJ, subm.
   "SMA Observations Reveal Abundant HNC Chemistry in Transition Disks"
2. Maher, T., **Law, C. J.**, & Cleeves, L. I. 2025. RNAAS, 9, 205 [not refereed] [link]
   "Radially-Extended C I Emission in the IM Lup Protoplanetary Disk Uncovered with Matched Filtering"
3. Yoshida, T., Nomura, H., **Law, C. J.**, et al., 2024. ApJL, 971, L15 [link]
   "Outflow Driven by a Protoplanet Embedded in the TW Hya Disk"
4. Booth, A. S., **Law, C. J.**, Temmink, M., et al., 2023. A&A, 678, 146 [link]
   "Tracing snowlines and C/O ratio in a planet-hosting disk: ALMA molecular line observations towards the HD 169142 disk"
5. Sturm, J. A., McClure M. K., **Law, C. J.**, et al., 2023. A&A, 677, 17 [link]
   "The edge-on protoplanetary disk HH 48 NE. I. Modeling the geometry and stellar parameters"
6. Romero-Mirza, C. E., Öberg, K. I., **Law, C. J.**, et al., 2023. ApJ, 943, 35 [link]
   "Cold Deuterium Fractionation in the Nearest Planet-Forming Disk"

7. Teague, R., **Law, C. J.**, Huang, J., et al., 2021. JOSS, 6, 67 [link]
   "disksurf: Extracting the 3D Structure of Protoplanetary Disks"
8. Zhang, K., Booth, A. S., **Law, C. J.**, et al., 2021. ApJS, 257, 5 [link]
   "MAPS. V. CO Gas Distributions"
9. Guzmán, V. V., Bergner, J. B., **Law, C. J.**, et al., 2021. ApJS, 257, 6 [link]
   "MAPS. VI. Distribution of the Small Organics HCN, C_2H, and H_2CO"

Other Co-Authored Publications

1. Zallio, L., et al. (incl. **Law, C. J.**), et al. 2025. A&A, subm.
   "The ^{12}CO Gas Structures of Protoplanetary Disks in the Upper Scorpius Region"
2. Jiang, S. D., et al. (incl. **Law, C. J.**), et al. 2025. ApJ, subm.
   "Physical and Chemical Characterization of GY 91's Multi-ringed Protostellar Disk with ALMA"
3. Booth, A. S., et al. (incl. **Law, C. J.**), et al. 2025. ApJ, subm.
   "The Chemical Diversity of Giant-planet Nurseries as Revealed by ALMA"
4. Sameshima, N., et al. (incl. **Law, C. J.**), et al. 2025. MNRAS, subm.
   "JWST-DECO: Temporal Variations in the Mid-IR Silicate Features of Two T Tauri Disks Based on Spitzer & JWST Observations"
5. Armitage, T., et al. (incl. **Law, C. J.**), et al. 2025. ApJ, subm.
   "Tracing Pebble Drift History in Two Protoplanetary Disks with CO Enhancement"
6. Long, X., et al. (incl. **Law, C. J.**), et al. 2025. ApJ, in press [link]
   "Chandra Large Project Observations of the Supernova Remnant N132D: Measuring the Expansion of the Forward Shock"
7. Romero-Mirza, C. E., et al. (incl. **Law, C. J.**), 2025. ApJ, 991, 128 [link]
   "JWST-MIRI Observations of the Irradiated Chemistry in the Inner Disk Cavity of GM Aur"
8. Rampinelli, L., et al. (incl. **Law, C. J.**), 2025. A&A, 698, 115 [link]
   "Radial variations in nitrogen, carbon, and hydrogen fractionation in the PDS 70 planet-hosting disk"
9. Booth, A. S., et al. (incl. **Law, C. J.**), 2025. ApJL, 986, 9 [link]
   "Ice Sublimation in the Dynamic HD 100453 Disk Reveals a Rich Reservoir of Inherited Complex Organics"
10. Boyden, R. D., Emig, K. L., Ballering, N. P., **Law, C. J.**, et al. 2025. ApJ, 983, 81 [link]
    "Discovery of Radio Recombination Line Emission from Proplyds in the Orion Nebula Cluster"
11. Lewis, B. L., et al. (incl. **Law, C. J.**), 2025. Phys. Rev. Phys. Educ. Res. 21, 010124 [link]
    "Improving undergraduate astronomy students' skills with research literature via accessible summaries:
    An exploratory case study with Astrobites-based reading assignments"
12. Getman, K. V., et al. (incl. **Law, C. J.**), 2025. ApJ, 980, 57 [link]
    "Multi-Observatory Study of Young Stellar Energetic Flares (MORYSEF):
    No Evidence for Abnormally Strong Stellar Magnetic Fields After Powerful X-ray Flares"
13. Evans, L., et al. (incl. **Law, C. J.**), 2025. ApJ, 982, 62 [link]
    "ALMA Reveals Thermal and Nonthermal Desorption of Methanol Ice in the HD 100546 Protoplanetary Disk"
14. Temmink, M., et al. (incl. **Law, C. J.**), 2025. A&A, 693, 101 [link]
    "Characterising the molecular line emission in the asymmetric Oph-IRS 48 dust trap:
    Temperatures, timescales, and sub-thermal excitation"
15. Getman, K. V., et al. (incl. **Law, C. J.**), 2024. ApJ, 976, 195 [link]
    "Multi-Observatory Research of Young Stellar Energetic Flares (MORYSEF):
    X-ray Flare Related Phenomena and Multi-epoch Behavior"
16. Keyte, L., Kama, M., Booth, A. S., **Law, C. J.**, & Leemker, M. 2024. MNRAS, 534, 4 [link]
    "Volatile composition of the HD 169142 disk and its embedded planet"
17. Bergner, J. B., et al. (incl. **Law, C. J.**), 2024. ApJ, 975, 166 [link]
    "JWST Ice Band Profiles Reveal Mixed Ice Compositions in the HH 48 NE Disk"
18. Booth, A. S., et al. (incl. **Law, C. J.**), 2024. AJ, 975, 72 [link]
    "Measuring the ^{34}S and ^{33}S Isotopic Ratios of Volatile Sulfur during Planet Formation"
19. Yamato, Y., et al. (incl. **Law, C. J.**), 2024, ApJ, 974, 83 [link]
    "Detection of Dimethyl Ether in the Central Region of the MWC 480 Protoplanetary Disk"

20. Sturm, J. A., et al. (incl. **Law, C. J.**), 2024, A&A, 689, 92 [link]
"A JWST/MIRI analysis of the ice distribution and PAH emission in the protoplanetary disk HH 48 NE"
21. Rampinelli, L., et al. (incl. **Law, C. J.**), 2024, A&A, 689, 65 [link]
"ALMA high-resolution observations unveil planet formation shaping molecular emission in the PDS 70 disk"
22. Tanious, M., et al. (incl. **Law, C. J.**), 2024. A&A, 687, 92 [link]
"Anatomy of the Class I protostar L1489 IRS with NOEMA. I. Disk, streamers, outflow(s) and bubbles at 3 mm"
23. Yoshida, T. C., et al. (incl. **Law, C. J.**), 2024. ApJ, 966, 63 [link]
"The First Spatially Resolved Detection of ^{13}CN in a Protoplanetary Disk and Evidence for Complex Carbon Isotope Fractionation"
24. Booth, A. S., et al. (incl. **Law, C. J.**), 2024. AJ, 167, 165 [link]
"An ALMA Molecular Inventory of Warm Herbig Ae Disks. II. Abundant Complex Organics and Volatile Sulphur in the IRS 48 Disk"
25. Booth, A. S., et al. (incl. **Law, C. J.**), 2024, AJ, 167, 164 [link]
"An ALMA Molecular Inventory of Warm Herbig Ae Disks. I. Molecular Rings, Asymmetries, and Complexity in the HD 100546 Disk"
26. Romero-Mirza, C. E., et al. (incl. **Law, C. J.**), 2024. ApJ, 964, 36 [link]
"JWST-MIRI Spectroscopy of Warm Molecular Emission and Variability in the AS 209 Disk"
27. Sano, H., et al. (incl. **Law, C. J.**), 2023. ApJ, 958, 53 [link]
"ALMA Observations of Supernova Remnant N49 in the Large Magellanic Cloud. II. Non-LTE Analysis of Shock-heated Molecular Clouds"
28. Sturm, J. A., et al. (incl. **Law, C. J.**), 2023. A&A, 679, 138 [link]
"A JWST inventory of protoplanetary disk ices. The edge-on protoplanetary disk HH 48 NE, seen with the Ice Age ERS program"
29. Waggoner, A. R., et al. (incl. **Law, C. J.**), 2023. ApJ, 956, 103 [link]
"MAPS: Constraining Serendipitous Time Variability in Protoplanetary Disk Molecular Ion Emission"
30. Portilla-Revelo, B., Kamp, I., Facchini, S., van Dishoeck, E. F., **Law, C. J.**, et al. 2023. A&A, 677, 76 [link]
"Constraining the gas distribution in the PDS 70 disc as a method to assess the effect of planet-disc interactions"
31. Sturm, J. A., et al. (incl. **Law, C. J.**), 2023. A&A, 677, 18 [link]
"The edge-on protoplanetary disk HH 48 NE. II. Modeling ices and silicates"
32. Galloway-Sprietsma, M., et al. (incl. **Law, C. J.**), 2023. ApJ, 950, 147 [link]
"MAPS: Complex Kinematics in the AS 209 Disk Induced by a Forming Planet and Disk Winds"
33. Pegues, J., et al. (incl. **Law, C. J.**), 2023. ApJ, 948, 57 [link]
"An SMA Survey of Chemistry in Disks around Herbig AeBe Stars"
34. Banovetz, J., et al. (incl. **Law, C. J.**), 2023. ApJ, 948, 33 [link]
"Hubble Space Telescope Proper Motion Measurements of Supernova Remnant N132D: Center of Expansion and Age"
35. Calahan, J. K., et al. (incl. **Law, C. J.**), 2023. Nature Astronomy, 7, 49 [link]
"UV-driven chemistry as a signpost of late-stage planet formation"
36. Galván-Madrid, R., Zhang, Q., Izquierdo, A., **Law, C. J.**, et al., 2023. ApJL, 942, L7 [link]
"Clustered Formation of Massive Stars within an Ionized Rotating Disk"
37. Anderson, A. R., Williams, J. P., van der Marel, N., **Law, C. J.**, et al., 2022. ApJ, 938, 55 [link]
"Protostellar and Protoplanetary Disk Masses in the Serpens Region"
38. Bae, J., et al. (incl. **Law, C. J.**), 2022. ApJL, 934, L20 [link]
"MAPS: A Circumplanetary Disk Candidate in Molecular-line Emission in the AS 209 Disk"
39. Sharda, P., et al. (incl. **Law, C. J.**), 2022. MNRAS, 509, 2 [link]
"First extragalactic measurement of the turbulence driving parameter: ALMA observations of the star-forming region N159E in the Large Magellanic Cloud"
40. Martín-Doménech, R., et al. (incl. **Law, C. J.**), 2021. ApJ, 923, 155 [link]
"Hot Corino Chemistry in the Class I Binary Source Ser-emb 11"

41. Öberg, K. I., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 1 [link]
"MAPS. I. Program Overview and Highlights"
42. Czekala, I., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 2 [link]
"MAPS. II. CLEAN Strategies for Synthesizing Images of Molecular Line Emission in Protoplanetary Disks"
43. Bosman, A. D., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 7 [link]
"MAPS. VII. Substellar O/H and C/H and Superstellar C/O in Planet-feeding Gas"
44. Alarcón, F., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 8 [link]
"MAPS. VIII. CO Gap in AS 209 – Gas Depletion or Chemical Processing?"
45. Ilee, J. D., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 9 [link]
"MAPS. IX. Distribution and Properties of the Large Organic Molecules HC_3N, CH_3CN, and c-C_3H_2"
46. Cataldi, G., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 10 [link]
"MAPS. X. Studying Deuteration at High Angular Resolution toward Protoplanetary Disks"
47. Bergner, J. B., Öberg, K. I., Guzmán, V. V., **Law, C. J.**, et al., 2021. ApJS, 257, 11 [link]
"MAPS. XI. CN and HCN as Tracers of Photochemistry in Disks"
48. Le Gal, R., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 12 [link]
"MAPS. XII. Inferring the C/O and S/H Ratios in Protoplanetary Disks with Sulfur Molecules"
49. Aikawa, Y., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 13 [link]
"MAPS. XIII. HCO^+ and Disk Ionization Structure"
50. Sierra, A., Pérez, L. M., Zhang, K., **Law, C. J.**, et al., 2021. ApJS, 257, 14 [link]
"MAPS. XIV. Revealing Disk Substructures in Multiwavelength Continuum Emission"
51. Bosman, A. D., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 15 [link]
"MAPS. XV. Tracing Protoplanetary Disk Structure within 20 au"
52. Booth, A. S., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 16 [link]
"MAPS. XVI. Characterizing the Impact of the Molecular Wind on the Evolution of the HD 163296 System"
53. Calahan, J. K., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 17 [link]
"MAPS. XVII. Determining the 2D Thermal Structure of the HD 163296 Disk"
54. Teague, R., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 18 [link]
"MAPS. XVIII. Kinematic Substructures in the Disks of HD 163296 and MWC 480"
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"MAPS. XIX. Spiral Arms, a Tail, and Diffuse Structures Traced by CO around the GM Aur Disk"
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"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"
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LIST OF PI-LED OBSERVING PROGRAMS

1. Vertical Structure and Grain Properties of the Largest Edge-On Protoplanetary Disk — **LBTO**, 4 hrs, 2025B
2. An ALMA-JWST View of the Nested CW Tau Disk Wind — **JWST + ALMA**, A, 3.3 hrs + 8.4 hrs, Cycle 12
3. Sulfur Fractionation in the Giant Planet-Hosting HD 169142 Disk — **SMA**, 1 B track, 2024B/25A
4. Chemical Signatures of a Recently-Confirmed Giant Protoplanet in the HD 169142 Disk — **ALMA**, B, 21.8 hrs, Cycle 11
5. Witnessing Giant Planet Formation in the Act — **ALMA**, A, 5.2 hrs, Cycle 11
6. Detecting Free-free Emission around Embedded Protoplanets — **ALMA**, B, 14.3 hrs, Cycle 11
7. Searching for a Giant Protoplanet in a Massive, Edge-on Protoplanetary Disk — **VLA**, A, 22.5 hrs, 2024B
8. Characterizing Large-scale Gas Streamers around Planet-forming Disks — **SMT**, 43.0 hrs, 2024A
9. Detecting Free-free Emission around a Giant Protoplanet in the HD 169142 Disk — **VLA**, A, 20.0 hrs, 2024A
10. Searching for a Hidden Reservoir of Complex Nitrile Chemistry in Disks — **SMT**, 24.0 hrs, 2023B
11. Chemical Signatures of a Recently-Confirmed Giant Protoplanet in the HD 169142 Disk — **ALMA**, B, 21.8 hrs, Cycle 10
12. Witnessing Giant Planet Formation in the Act — **ALMA**, B, 5.2 hrs, Cycle 10
13. HNC as a Novel Tracer of Protoplanetary Disk Properties — **SMA**, 4 A + 6 B tracks, 2023A/23B
14. Linking Ice and Complex Molecule Inventories in MYSOs — **ALMA**, A, 5.4 hrs, Cycle 9
15. Witnessing Giant Planet Formation in the Act — **ALMA**, B, 6.0 hrs, Cycle 9
16. Search for a Surviving Stellar Companion of Nearby SNRs E0102 and N132D — **Magellan**, 2.5 nights, 2022B
17. Connecting Scaling Laws between Exoplanets and Young Disks — **SMA**, 8 B tracks, 2020B/21A
18. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D — **Magellan**, 3 nights, 2021B
19. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D — **Magellan**, 4 nights, 2020B
20. Ionized Accretion Flows around 0.1 pc Scale Clusters with O-Type Stars — **ALMA**, C, 14.8 hrs, Cycle 7
21. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D — **Magellan**, 3 nights, 2019B
22. Formation of O Stars by Accretion of Ionized Gas — **VLA**, A, 11 hrs, 2019A
23. Ionized Accretion Flows around 0.1 pc Scale Clusters with O-Type Stars — **SMA**, 8 B tracks, 2018B/19A