

Charles J. Law – Curriculum Vitae

University of Virginia, Department of Astronomy
530 McCormick Road, Charlottesville, VA 22904, USA
cj8rd@virginia.edu | claw-astro.github.io
ORCID iD: 0000-0003-1413-1776 | 724-493-0763

PROFESSIONAL APPOINTMENTS

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| NASA Hubble Fellowship Program (NHFP) Sagan Fellow University of Virginia, Department of Astronomy (Charlottesville, VA) | Sept 2023 – Present |
| Postdoctoral Researcher Center for Astrophysics Harvard & Smithsonian (Cambridge, MA) | June 2023 – July 2023 |

EDUCATION

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| Ph.D., Astronomy and Astrophysics (Harvard University, Cambridge, MA) Thesis: Zooming in on the Chemistry of Star and Planet Formation | 2018 – 2023 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) Thesis: Carbon Chain Molecules Toward Embedded Low-Mass Protostars | 2013 – 2017 Advisor: Prof. Karin Öberg |

AWARDS

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| IAU Division H: Interstellar Matter and Local Universe, 2023 PhD Thesis Prize | 2024 |
| NASA Hubble Fellowship Program, Sagan Fellowship | 2023 – Present |
| 51 Pegasi b Postdoctoral Fellowship (declined) | 2023 |
| AAS Rodger Doxsey Travel Prize (241 st 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 **75 publications** (refereed or under review). See a full listing at the end of CV and [ADS](#) library for more details.

TELESCOPE OBSERVING & PROPOSALS

PI of **21 programs** and Co-I on an additional 71 programs for access to observing facilities.

PI:

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| 1. Sulfur Fractionation in the Giant Planet-Hosting HD 169142 Disk | SMA, 1 B track, 2024B |
| 2. Chemical Signatures of a Recently-Confirmed Giant Protoplanet in the HD 169142 Disk | ALMA, B, 21.8 hrs, Cycle 11 |
| 3. Witnessing Giant Planet Formation in the Act | ALMA, A, 5.2 hrs, Cycle 11 |
| 4. Detecting Free-free Emission around Embedded Protoplanets | ALMA, B, 14.3 hrs, Cycle 11 |
| 5. Searching for a Giant Protoplanet in a Massive, Edge-on Protoplanetary Disk | VLA, A, 22.5 hrs, 2024B |
| 6. Characterizing Large-scale Gas Streamers around Planet-forming Disks | SMT, 43.0 hrs, 2024A |
| 7. Detecting Free-free Emission around a Giant Protoplanet in the HD 169142 Disk | VLA, A, 20.0 hrs, 2024A |
| 8. Searching for a Hidden Reservoir of Complex Nitrile Chemistry in Disks | SMT, 24.0 hrs, 2023B |
| 9. Chemical Signatures of a Recently-Confirmed Giant Protoplanet in the HD 169142 Disk | ALMA, B, 21.8 hrs, Cycle 10 |
| 10. Witnessing Giant Planet Formation in the Act | ALMA, B, 5.2 hrs, Cycle 10 |
| 11. HNC as a Novel Tracer of Protoplanetary Disk Properties | SMA, 4 A + 6 B tracks, 2023A/23B |
| 12. Linking Ice and Complex Molecule Inventories in MYSOs | ALMA, A, 5.4 hrs, Cycle 9 |

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| 13. Witnessing Giant Planet Formation in the Act | ALMA, B, 6.0 hrs, Cycle 9 |
| 14. Search for a Surviving Stellar Companion of Nearby SNRs E0102 and N132D | Magellan, 2.5 nights, 2022B |
| 15. Connecting Scaling Laws between Exoplanets and Young Disks | SMA, 8 B tracks, 2020B/21A |
| 16. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D | Magellan, 3 nights, 2021B |
| 17. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D | Magellan, 4 nights, 2020B |
| 18. Ionized Accretion Flows around 0.1 pc Scale Clusters with O-Type Stars | ALMA, C, 14.8 hrs, Cycle 7 |
| 19. Jet-like, IR-bright Ejecta in O-rich LMC Supernova Remnant N132D | Magellan, 3 nights, 2019B |
| 20. Formation of O Stars by Accretion of Ionized Gas | VLA, A, 11 hrs, 2019A |
| 21. Ionized Accretion Flows around 0.1 pc Scale Clusters with O-Type Stars | SMA, 8 B tracks, 2018B/19A |

Co-I: ALMA (724 hrs), ACA (75 hrs), SMA (536 hrs), VLA (33 hrs), VLBA (72 hrs), GBT (14 hrs), SMT (20 hrs), IRAM 30m (50 hrs), NOEMA (64 hrs), JWST (47.6 hrs), Chandra (190 ks), HST (3 orbits), VLT (51 hrs), Shane (10 nights), Gemini (5 hrs), WIYN (1.5 nights), MMT (0.5 nights), HET/HPF (7.3 hrs), LBTO (4 hrs)

Observing: 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

Grants: Student Observing Support, VLA 2019A (\$34k), Student Observing Support, ALMA Cycle 9 (\$23k)

MAJOR COLLABORATIONS

Chemistry of Herbig Environments and their Exoplanet Relationships (CHEER) 2024 – Present
PI: Jamila Pegues; co-PIs: Dana Anderson, Karina Mauco, Miguel Vioque
ALMA Cycle 11 Large Program to perform a large, uniform chemical survey of disks around Herbig stars

DiskStrat: ALMA LP of Edge-on Disks 2024 – Present
PI: Romane Le Gal; co-PIs: Yuri Aikawa, Jennifer Bergner, Catherine Espaillat, François Ménard
ALMA Cycle 11 Large Program to map the 3D structure of carefully-selected, 9 edge-on disks

SMA-SPEC: the SMA Survey of Protoplanetary disks to Explore their Chemistry 2023 – Present
PI: Karin I. Öberg
SMA Large Scale Program to conduct unbiased spectral line survey of 40 planet-forming disks

The ALMA Disk-Exoplanet C/Onnection (DECO) 2023 – Present
PI: Ilse Cleeves; co-PIs: Yuri Aikawa, Viviana V. Guzmán, Anna Miotello, Dana Anderson
ALMA Cycle 8 Large Program to survey the chemistry of 80 disks across 4 star-forming regions

X-ray Mega-Flares in the Orion Nebula Cluster 2022 – Present
PI: Konstantin V. Getman
Multi-telescope (Chandra, VLBA, ALMA, HET) campaign to study flares in ~1000 PMS stars in the ONC

N132D Chandra Legacy Team 2019 – Present
PI: Paul P. Plucinsky
Chandra Cycle 20 Large Program legacy observations of SNR N132D at unprecedented depth

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 study the chemistry of five protoplanetary disks at 10-20 au scales
[MAPS team [webpage](#) and selected press [coverage](#)]

TEACHING

Instructor

Introduction to Scientific Programming in Python (Harvard Pre-College Program)

Summer 2021, 2022, 2023

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| 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

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| Astronomy 1610 - Introduction to Astronomical Research for Potential Astronomy Majors (UVA) | Apr 2025 [<i>expected</i>] |
| Astronomy 1210 - Introduction to the Sky and the Solar System (UVA) | Mar 2025 [<i>expected</i>] |
| Astronomy 201 - Descriptive Astronomy (Harry S Truman College, City Colleges of Chicago) | Oct 2023, Apr 2024 |

Teaching Fellow

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| 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

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| 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

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|---|-----------------------|
| Subcommittee Chair, AAS Education Committee (Outreach, Community Engagement & Informal Education) | 2024 – Present |
| Co-Organizer, Astronomy Mentoring Program for Upcoming Postdocs (AMP-UP) | 2024 – Present |
| Postdoc Representative (UVA) | 2024 – Present |
| Co-Organizer, Journal Club (UVA) | Spring 2024 – Present |
| 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 |
| Member, CfA APS-IDEA, Accessibility Subcommittee | 2021 – 2023 |
| Peer Mentor, Harvard Astronomy Department | 2021 – 2022 |
| Co-Organizer, CfA Star Formation Journal Club | 2022 – 2023 |
| Co-Organizer, Graduate School Visitation Days (Harvard) | Spring 2020 |
| Co-Organizer, Student-Faculty Lunch Series (Harvard) | Spring 2020 |

SERVICE

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| Referee (A&A, A&A Letters, ApJ, ApJL, ApJS) | 2018 – Present |
| External panelist, HST Time Allocation Committee / Planets & Planet Formation, Cycle [<i>*redacted</i>] | 202* |
| Reviewer, NRAO/GBO Time Allocation Committee / ISM | 2024 – Present |
| AAS Chambliss Competition Poster Judge (4x) | 2022 – Present |
| Member, New Great Observatories Science Analysis Group | 2023 – Present |
| 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

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| 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, astrobit es [link] | 2018 – 2020 |

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| 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 |
| Speaker, Science Research Mentoring Program , Cambridge Rindge and Latin School | Mar 2018 |

MENTORING

Research:

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| Cole Wampler (NRAO, Staff) | Spring 2025 – Present |
| Deryl Long (UVA, Graduate) | Fall 2024 – Present |
| Kyle Gresko (UVA, Undergraduate Senior Thesis) | 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) | 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 predoctoral fellow at the National Bureau of Economic Research | 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:

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| Charlie Mpetha (AMP-UP, University of Edinburgh, Graduate) | Fall 2024 – Present |
| Rayna Rampalli (AMP-UP, Dartmouth, Graduate) | Fall 2024 – Present |
| Everett McArthur (APS National Mentoring Community, 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 70 talks, including 15+ public talks (see a full listing [here](#)).

Seminars, Colloquium, and Invited

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| Symposium on Next Generation Astrochemistry (Tokyo, Japan) | Nov 2024 |
| UVA-NRAO Joint Colloquium (Charlottesville, VA) | Oct 2024 |
| Carnegie Earth & Planets Laboratory, Astronomy Seminar (Washington DC) | 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 |
| SMA Science Seminar, CfA (Cambridge, MA) | May 2023 |
| Leiden Astrochemistry Seminar (Leiden, The Netherlands) | Sept 2022 |

Conference Contributed

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| Extreme Solar Systems V (Christchurch, New Zealand) | Mar 2024 |
| Kavli-IAU Astrochemistry Symposium (Traverse City, MI) | July 2023 |
| 2023 Northeast Star and Planet Formation Meeting, CfA (Cambridge, MA) | June 2023 |
| Planet and Binary Formation in GI Discs (Leicester, UK) | Sept 2022 |
| Exoplanets IV, AAS Topical Conference Series (Las Vegas, NV) | May 2022 |
| Science with the SMA: Present and Future (Taipei, Taiwan) | Oct 2019 |

Public

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| McCormick Observatory Public Nights (Charlottesville, VA) | Oct 2024 |
| Charlottesville Astronomical Society (Charlottesville, MA) | Jan 2024 |
| Cape Cod Museum of Natural History (Brewster, MA) | July 2022 |
| Union County College / AAI (Cranford, NJ) | Dec 2019 |

PUBLICATIONS

Statistics from [ADS](#): 75 papers (refereed or submitted), 15 as first author; students marked with †.
1865 citations (387 first-author citations), h-index = 24, ORCID: 0000-0003-1413-1776.

First Author

1. **Law, C. J.**, Le Gal, R., Yamato, Y., et al., 2025. ApJ, in press
“A Multi-line Analysis of the Distribution and Excitation of CS and H₂CS in the HD 163296 Disk”
2. **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”
3. **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”
4. **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”
5. **Law, C. J.**, Booth, A. S., & Öberg, K. I. 2023. ApJL, 952, L19 [\[link\]](#)
“SO and SiS Emission Tracing an Embedded Planet and Compact ¹²CO and ¹³CO Counterparts in the HD 169142 Disk”
6. **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”
7. **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”
8. **Law, C. J.**, Loomis, R. A., Teague, R., et al., 2021. ApJS, 257, 3 [\[link\]](#)
“MAPS. III. Characteristics of Radial Chemical Substructures”
9. **Law, C. J.**, Teague, R., Loomis, R. A., et al., 2021. ApJS, 257, 4 [\[link\]](#)
“MAPS. IV. Emission Surfaces and Vertical Distribution of Molecules”
10. **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”
11. **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”
12. **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”
13. **Law, C. J.**, Öberg, K. I., Bergner, J. B., et al., 2018. ApJ, 863, 88 [\[link\]](#)
“Carbon Chain Molecules Toward Embedded Low-Mass Protostars”
14. **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”
15. **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. 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”
2. 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”
3. 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”
4. 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”
5. Teague, R., **Law, C. J.**, Huang, J., et al., 2021. JOSS, 6, 67 [\[link\]](#)
“disksurf: Extracting the 3D Structure of Protoplanetary Disks”
6. Zhang, K., Booth, A. S., **Law, C. J.**, et al., 2021. ApJS, 257, 5 [\[link\]](#)
“MAPS. V. CO Gas Distributions”
7. Guzmán, V. V., Bergner, J. B., **Law, C. J.**, et al., 2021. ApJS, 257, 6 [\[link\]](#)
“MAPS. VI. Distribution of the Small Organics HCN, C₂H, and H₂CO”

Other Co-Authored Publications

1. Booth, A. S., Wölfer, L., Temmink, M., Evans, L., **Law, C. J.**, et al. 2025. ApJL, subm.
“Ice sublimation in the dynamic HD 100453 disk reveals a rich reservoir of inherited complex organics”
2. Rampinelli, L., et al. (incl. **Law, C. J.**), et al. 2025. A&A, subm.
“Radial variations in nitrogen, carbon, and hydrogen fractionation in the PDS 70 planet-hosting disk”
3. Armitage, T., et al. (incl. **Law, C. J.**), et al. 2025. ApJ, subm.
“Tracing Pebble Drift History in Two Protoplanetary Disks with CO Enhancement”
4. Romero-Mirza, C. E., et al. (incl. **Law, C. J.**), et al. 2025. ApJ, subm.
“Irradiated Chemistry in the GM Aur Transition Disk Revealed by JWST MIRI”
5. Boyden, R. D., Emig, K. L., Ballering, N. P., **Law, C. J.**, et al. 2025. ApJ, in press
“Discovery of Radio Recombination Line Emission from Propyls in the Orion Nebula Cluster”
6. Lewis, B. L., et al. (incl. **Law, C. J.**), 2025. Physical Review Physics Education Research, in press [\[link\]](#)
“Improving Undergraduate Astronomy Students’ Skills with Research Literature via Accessible Summaries: A Case Study with Astrobites-based Lesson Plans”
7. 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”
8. Evans, L., et al. (incl. **Law, C. J.**), 2025. A&A, 982, 62 [\[link\]](#)
“ALMA Reveals Thermal and Nonthermal Desorption of Methanol Ice in the HD 100546 Protoplanetary Disk”
9. 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”
10. 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”
11. 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”
12. 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”
13. Booth, A. S., et al. (incl. **Law, C. J.**), 2024. AJ, 975, 72 [\[link\]](#)
“Measuring the ³⁴S and ³³S isotopic ratios of volatile sulfur during planet formation”
14. 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”
15. 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”
16. 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”
17. 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”
18. Yoshida, T. C., et al. (incl. **Law, C. J.**), 2024. ApJ, 966, 63 [\[link\]](#)
“The First Spatially Resolved Detection of ¹³CN in a Protoplanetary Disk and Evidence for Complex Carbon Isotope Fractionation”
19. 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”
20. 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”
21. 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”

22. 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"
23. 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"
24. 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"
25. 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"
26. 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"
27. 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"
28. Pegues, J., et al. (incl. **Law, C. J.**), 2023. ApJ, 948, 57 [\[link\]](#)
"An SMA Survey of Chemistry in Disks around Herbig AeBe Stars"
29. 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"
30. 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"
31. 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"
32. 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"
33. 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"
34. 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"
35. 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"
36. Öberg, K. I., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 1 [\[link\]](#)
"MAPS. I. Program Overview and Highlights"
37. 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"
38. 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"
39. 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?"
40. Ilee, J. D., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 9 [\[link\]](#)
"MAPS. IX. Distribution and Properties of the Large Organic Molecules HC₃N, CH₃CN, and c-C₃H₂"
41. Cataldi, G., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 10 [\[link\]](#)
"MAPS. X. Studying Deuteration at High Angular Resolution toward Protoplanetary Disks"
42. 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"
43. 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"
44. Aikawa, Y., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 13 [\[link\]](#)

- "MAPS. XIII. HCO⁺ and Disk Ionization Structure"
45. 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"
46. Bosman, A. D., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 15 [\[link\]](#)
"MAPS. XV. Tracing Protoplanetary Disk Structure within 20 au"
47. 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"
48. 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"
49. 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"
50. Huang, J., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 19 [\[link\]](#)
"MAPS. XIX. Spiral Arms, a Tail, and Diffuse Structures Traced by CO around the GM Aur Disk"
51. Schwarz, K. R., et al. (incl. **Law, C. J.**), 2021. ApJS, 257, 20 [\[link\]](#)
"MAPS. XX. The Massive Disk Around GM Aurigae"
52. Sano, H., et al. (incl. **Law, C. J.**), 2020. ApJ, 902, 53 [\[link\]](#)
"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"
53. Le Gal, R., Öberg, K. I., Huang, Jane, **Law, C. J.**, et al., 2020. ApJ, 898, 131 [\[link\]](#)
"A 3 mm Chemical Exploration of Small Organics in Class I YSOs"