

JIALU LI (李佳璐)

Curriculum Vitae

Department of Astronomy
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EMPLOYMENT

University of Maryland, College Park
Post-Doctoral Associate

May 2023 - Present

EDUCATION

University of Maryland, College Park

Ph.D. in Astronomy

May 2023

Advisors: Prof. Andrew Harris and Prof. Alexander G. G. M. Tielens

Thesis: *Molecular Spectroscopy of Star-Forming Regions: Cool and Hot, Close and Far*

M.S. in Astronomy

Dec. 2018

University of Science and Technology of China

B.Sc. in Astronomy

Jun. 2016

University of Vienna

Exchange student

Sep. 2014 – Jan. 2015

PUBLICATIONS

(1) Refereed journal articles:

1. “On the Interpretation of Mid-Infrared Absorption Lines of Gas Phase H₂O as Observed by JWST/MIRI”
Li, J., Boogert, A., and Tielens, A. G. G. M., [ApJS, 273, 32 \(2024\)](#)
2. “Argus/GBT Observations of Molecular Gas in the Inner Regions of IC 342”
Li, J., Harris, A. I., Rosolowsky, E., Kepley, A., Frayer, D., Bolatto, A., Leroy, A., Meyer, J., Church, S., Gundersen, J., Cleary, K., and the DEGAS team, [ApJ, 963, 117 \(2024\)](#)
3. “Dynamics in Star-forming Cores (DiSCo): Project Overview and the First Look toward the B1 and NGC 1333 Regions in Perseus”
Chen, C.-Y., Friesen, R., **Li, J.**, Schmiedeke, A., Frayer, D., Li, Z.-Y., Tobin, J., Looney, L. W., Offner, S., Mundy, L. G., Harris, A. I., Church, S., Ostriker, E. C., Pineda, J. E., Hsieh, T.-H., Lam K. H., [MNRAS, 527, 10279 \(2023\)](#)
4. “High-resolution SOFIA/EXES Spectroscopy of Water Absorption Lines in the Massive Young Binary W3 IRS 5”
Li, J., Boogert, A., Barr, A. G., DeWitt, C., Rashman, M., Neufeld, D., Indriolo, N., Pendleton, Y., Montiel, E., Richter, M., Chiar, J., Tielens, A. G. G. M., [ApJ, 953, 103 \(2023\)](#)
5. “Surveying the Inner Structure of Massive Young Stellar Objects in the L Band”
Barr, A. G., **Li, J.**, Boogert, A., Lee, A., DeWitt, C. N., and Tielens, A. G. G. M., [A&A, 666, A26 \(2022\)](#)
6. “M-band High-Resolution Spectroscopy towards Massive Young Stellar Object W3 IRS 5 with iSHELL/IRTF”
Li, J., Boogert, A., Barr, A. G., and Tielens, A. G. G. M., [ApJ, 935, 161 \(2022\)](#)

7. “Infrared H₂O Absorption in Circumstellar Disks of Massive Protostars at High Spectral Resolution: Full spectral survey results of AFGL 2591 and AFGL 2136”
Barr, A. G., Boogert, A., **Li, J.**, DeWitt, C. N., Montiel, E., Richter, M. J., Indriolo, N., Pendleton, Y., Chiar, J., and Tielens, A. G. G. M., [ApJ, 935, 165 \(2021\)](#)
 8. “Discovery of High-quality Daytime Seeing Windows at the Antarctic Taishan Station”
Tian, Q., Jiang, P., Jin, X., **Li, J.**, Pei, C., Du, F., Li, Z., Li, X., Chen, H., Ji, T., Shi, X., Zhang, S., Yang, C., and Zhou, H., [MNRAS, 493\(4\), 5648 \(2020\)](#)
 9. “Investigating the Complex Velocity Structures within Dense Molecular Cloud Cores with GBT-Argus”
Chen, C.-Y., Storm, S., Li, Z.-Y., Mundy, L. G., Frayer, D., **Li, J.**, Church, S., Friesen, R., Harris, A. I., Looney, L. W., Offner, S., Ostriker, E. C., Pineda, J. E., Tobin, J., Chen, H.-H., [MNRAS, 490, 527 \(2019\)](#)
 10. “Far-infrared Metallicity Diagnostics: Application to Local Ultraluminous Infrared Galaxies”
Pereira-Santaella, M., Rigopoulou, D., Farrah, D., Lebouteiller, V., & **Li, J.**, [MNRAS, 470, 1218 \(2017\)](#)
- (2) Journal articles, in preparation:
1. “Comprehensive High-Resolution MIR Spectral Survey on NGC 7538 IRS 1, I. Disk Structure and Velocity Field from C₂H₂, HCN, and NH₃ Absorption”
Li, J., Boogert, A., Tielens, A. G. G. M., and the SOFIA/EXES team
 2. “Comprehensive High-Resolution MIR Spectral Survey on NGC 7538 IRS 1, II: CO and H₂O”
Li, J., Boogert, A., Tielens, A. G. G. M., and the SOFIA/EXES team
 3. “Circumstellar Dynamics in a Binary Massive Protostellar System: SMA Insights from HCN Vibrational Excited Lines and Sulfur Molecule”
Li, J., Boogert, A., Williams, J., and Tielens, A. G. G. M., et al.
Submission postponed to incorporate additional data from NOEMA observations carried out in Winter 2024/2025.
 4. “DEGAS Data Release 1 Paper”
Kepley, A., Rosolowsky, E., **Li, J.**, Harris, A. I., Leroy, A., Song, Y.-Q., Bolatto, A., Meyer, J., Gundersen, J., and the DEGAS team, ApJ submission: 2025
- (3) Memorandum:
1. GBT memo #302: “Calibration of Argus and the 4mm Receiver on the GBT”
Frayer, D. T., Maddalena, R. J., White, S., Galen, W., Kepley, A., **Li, J.**, Harris, A. I., arXiv e-prints, [arXiv:1906.02307 \(2019\)](#)

SCIENTIFIC PRESENTATIONS

Contributed Conferences Talks

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| Apr. 2024 | 814. WE-Heraeus Seminar, Heritage of SOFIA – Scientific Highlights and Future Perspectives, Stuttgart, Germany
“SOFIA/EXES Survey of Gaseous Water in the Massive Young Binary W3 IRS 5” |
| Mar. 2024 | APS Meeting, Minneapolis, MN
“SOFIA/EXES Survey of Gaseous Water in the Massive Young Binary W3 IRS 5” |
| Feb. 2022 | SOFIA Conference, Lake Arrowhead, CA
“High-Resolution MIR Spectroscopy towards the Massive Young Stellar Binary W3 IRS 5” |

Seminars

- Jul. 2025 Seminar, SHAO, Shanghai (invited talk)
“Comprehensive High-Spectral-Resolution Mid-IR Spectroscopy: Probing the Innermost Gas of Massive Protostars”
- Jul. 2025 Seminar, SJTU, Shanghai
“Comprehensive High-Spectral-Resolution Mid-IR Spectroscopy: Probing the Innermost Gas of Massive Protostars”
- Mar. 2025 EPL Astronomy Seminar, Carnegie Science, Washington DC
“Comprehensive High-Spectral Resolution MIR Spectral on Massive Protostellar Projects”
- Nov. 2024 ACS-Astrochemistry Subdivision Webinar ([video link](#))
“High-Spectral Resolution MIR Spectroscopy: Unveiling the Innermost Structures of a Binary Hot Core”
- Feb. 2024 GBT Biweekly Webinar (invited virtual talk)
“Argus/GBT Observations of Molecular Gas in the Inner Regions of IC 342”
- Jan. 2024 Huanyu Kaiwu Seminar, USTC, Hefei
“SOFIA/EXES Survey of Gaseous Molecules in Massive Protostars”
- Jan. 2024 Martes Talk, Nanjing University, Nanjing (invited talk)
“SOFIA/EXES Survey of Gaseous Molecules in Massive Protostars”
- Dec. 2023 PDS Seminar, Tsinghua University, Beijing
“High-Spectral Resolution MIR Spectroscopy: Unveiling the Innermost Structures of Massive Protostars”
- Dec. 2023 SHAO Seminar, Shanghai
“SOFIA/EXES Survey of Gaseous Water in the Massive Young Binary W3 IRS 5”
- Dec. 2023 Monday Afternoon Talk, MIT, MA
“SOFIA/EXES Survey of Gaseous Water in the Massive Young Binary W3 IRS 5”
- Oct. 2018 TUNA Lunch Talk, NRAO, VA (invited talk)
“Resolving Dense Gas in Galaxies: Argus/GBT’s Millimeter View of IC 342”

Poster Presentations

- Sep. 2023 The First Year of JWST Science Conference, Baltimore, MD
“Interpret Gaseous H₂O Absorption Ro-vibrational Lines Probed by JWST/MIRI”
- Jun. 2023 Astrochemistry at High Resolution Faraday Discussion, Baltimore, MD
“Interpret Mid-Infrared Gas-Phase H₂O Absorption Ro-vibrational Lines Probed by JWST/MIRI Spectroscopy”

ACCEPTED PROPOSALS

- 2024 **NOEMA. PI.** “Unveiling Disk Structures and Dynamics within the Massive Multiple System W3 IRS5”. Competing for 7.5% time allocation; 10 hrs awarded for config A+C.
- 2024 **VLA.** Co-I. “Resolved atomic ISM, HII regions and supernova remnants beyond the Local Group”, PI: E. Koch. Awarded 176 hours.
- 2024 **GBT.** Co-I. “Resolving the turbulence-deficient molecular clouds in the outer Galaxy”, PI: L. Lin. Awarded 21.0 hours.
- 2024 **SMA.** Co-I. “Resolved CO excitation across the Milky-Way Analog Galaxy IC 342”, PI: J. den Brok & E. Koch. Awarded 6 tracks.

- 2024 **IRAM**. Co-I. “Tracing the Physics of the Molecular ISM with CO Isotopologues across IC 342”, PI: I. Galic & J. den Brok. Awarded 64.8 hrs.
- 2023 **SMA. Scientific Lead** (listed as Co-I). “Resolving Disks in the Massive Protostellar Binary W3 IRS 5”, PI: A. Boogert. Awarded 5 tracks.
- 2022 **SMA. Scientific Lead** (listed as Co-I). “Resolving Disks in the Massive Protostellar Binary W3 IRS 5”, PI: A. Boogert. Awarded 5 tracks.
- 2021 **GBT**. Co-I. “GBT EDGE: A Representative Survey of the $z=0$ Universe with Full IFU Spectroscopy”, PI: A. Bolatto. Awarded 300 hrs.
- 2020 **IRTF**. Co-I. “Surveying the Structure of Massive YSO Disks”, PI: A. Barr. Awarded 10 hrs.
- 2020 **SOFIA**. Co-I. “EXES Survey of the Molecular Inventory of Hot Cores”, PI: A. Tielens. Awarded 24.8 hrs.
- 2019 **GBT**. Co-I. “Characterizing the Internal Velocity Fields of Star-forming Cores with GBT-Argus”, PI: C.-Y. Chen. Awarded 228.5 hrs.
- 2017 **GBT. PI**. “A large-scale mapping of molecular gas in the bright extra-galaxy IC342”. Awarded 10 hrs.

OBSERVING EXPERIENCE

- 2017 – The Green Bank 100 m Telescope (GBT): over 130 hours of usage.
Observing routinely for large survey programs including DEGAS, DiSCo, and EDGE.
- 2021 The NASA Infrared Telescope Facility (IRTF)

MENTORING

- Oct. 2023 – Madden, M. C. L., First-year Master Research Project at Leiden University
- Jul. 2024 “IR Spectroscopy of Warm Molecular Gas in Hot Cores”. Co-advise with A. Tielens and A. Boogert.

TEACHING EXPERIENCE

- 2016 – 2021 Grader for General Astronomy, Black Holes, Stars and Stellar Systems, Life in the Universe, Astrophysics of Exoplanets, The Solar Systems, Origin of the Universe, Computational Astrophysics

HONORS AND AWARDS

- 2016 National Astronomical Observatories Scholarship
- 2016 Outstanding Graduate Scholarship
- 2015 Summer Research Fellowship at University of Oxford
- 2014 China Scholarship Council (CSC) Fellowship for undergraduate international exchange program
- 2012–2016 Outstanding Student Scholarship

RELEVANT SKILLS

- Programming: Python, C, GBTIDL, \LaTeX , HTML
- Astronomy Software: DS9, TOPCAT, MIR, CASA
- Languages: English (fluent), Mandarin (native)

REFERENCES

Prof. Andrew Harris (PhD Advisor)

Department of Astronomy, University of Maryland, College Park

harris@astro.umd.edu

Prof. Alexander Tielens (PhD Advisor & Postdoctoral Mentor)

Leiden Observatory, Leiden University

tielens@strw.leidenuniv.nl

Dr. Adwin Boogert (Research Advisor & Collaborator)

Institute for Astronomy, University of Hawaii

aboogert@hawaii.edu