

# JIALU LI (李佳璐)

## Curriculum Vitae

Department of Astronomy  
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University of Maryland  
College Park, MD 20740

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## EMPLOYMENT

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### University of Maryland, College Park

Post-Doctoral Associate

May 2023 - Present

## EDUCATION

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### 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

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(1) Refereed journal articles:

1. “On the Interpretation of Mid-Infrared Absorption Lines of Gas Phase H<sub>2</sub>O 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 H<sub>2</sub>O 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 C<sub>2</sub>H<sub>2</sub>, HCN, and NH<sub>3</sub> 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 H<sub>2</sub>O”  
**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

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### Contributed Conferences Talks

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| Apr. 2024 | 814. WE-Heraeus Seminar, Heritage of SOFIA – Scientific Highlights and Future Perspectives, Stuttgart, Germany<br>“SOFIA/EXES Survey of Gaseous Water in the Massive Young Binary W3 IRS 5” |
| Mar. 2024 | APS Meeting, Minneapolis, MN<br>“SOFIA/EXES Survey of Gaseous Water in the Massive Young Binary W3 IRS 5”   |
| Feb. 2022 | SOFIA Conference, Lake Arrowhead, CA<br>“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 H<sub>2</sub>O Absorption Ro-vibrational Lines Probed by JWST/MIRI”
- Jun. 2023 Astrochemistry at High Resolution Faraday Discussion, Baltimore, MD  
“Interpret Mid-Infrared Gas-Phase H<sub>2</sub>O Absorption Ro-vibrational Lines Probed by JWST/MIRI Spectroscopy”

## ACCEPTED PROPOSALS

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- 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

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- 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

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- 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

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- 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

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- 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

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- Programming: Python, C, GBTIDL, L<sup>A</sup>T<sub>E</sub>X, HTML
- Astronomy Software: DS9, TOPCAT, MIR, CASA
- Languages: English (fluent), Mandarin (native)

## REFERENCES

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**Prof. Andrew Harris** (PhD Advisor)

Department of Astronomy, University of Maryland, College Park  
[harris@astro.umd.edu](mailto:harris@astro.umd.edu)

**Prof. Alexander Tielens** (PhD Advisor & Postdoctoral Mentor)

Leiden Observatory, Leiden University  
[tielens@strw.leidenuniv.nl](mailto:tielens@strw.leidenuniv.nl)

**Dr. Adwin Boogert** (Research Advisor & Collaborator)

Institute for Astronomy, University of Hawaii  
[aboogert@hawaii.edu](mailto:aboogert@hawaii.edu)