Xiangyu Zhang

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RESEARCH INTERESTS

Interstellar medium (847) | Stellar physics (1621) | Astrochemistry (75)

CURRENT POSITION:

Postdoctoral Researcher July 2025 - present

Max Planck Institute for Astronomy (MPIA, Heidelberg)

Supervisor: Dr. Gregory M. Green

EDUCATION

Graduate student October 2021-July 2025

Max Planck Institute for Astronomy (MPIA, Heidelberg)

Thesis defensed: July 3rd, 2025.

Supervisor: Dr. Gregory M. Green

Selected Distinction: Ernst Patzer Award

(for the best refereed publications by MPIA and ZAH junior scientists)

Bachelor's degree for natural science August 2017-June 2021

Department of physics, Tsinghua University (THU), Beijing

Supervisor: Prof. Shude Mao

Selected Distinction: Lin-bridge scholarship (highest distinction for astronomy undergrads)

SELECTED LIST OF PUBLICATIONS

See NASA ADS for the full list of work.

8. Zhang, X, Sihan. J, Green, G., et al. (2026) Asymmetry of PAH Mass Fraction in Andromeda: Insights into Extragalactic PAH Formation Channels. in prep.

7. Zhang, X, & Green, G., (2025) Mapping Dust beyond Stellar Color: a Binned Poisson-Corrected Dust $R(V)$ Map. in prep.

6. Zhang, X., Hensley, B., & Green, G., (2025) Dust Extinction-curve Variation in the Translucent Interstellar Medium is Driven by PAHs. The Astronomical Journal Letters,. 979(1), L17, 9 pp.

5. Green, G., Zhang, X., & Zhang, R. , (2025) The Dust Extinction Curve: Beyond R(V). The Astrophysical Journal. 988(1), 5, 22.

4. Zhang, X. & Green, G., (2025) Three-dimensional Maps of the Interstellar Dust Extinction Curve Within the Milky Way Galaxy. Science 387, 12091214 (2025). DOI:10.1126/science.ado9787. *Selected as the Cover article*.

3. Zhang, X., Green, G., & Rix. H.-W. (2023) Parameters of 220 Million Stars from Gaia BP/RP Spectra. Monthly Notices of the Royal Astronomical Society 524, no. 2 (2023): 1855-1884.

2. Zhang, X., et al. (2020). OGLE-2015-BLG-1771Lb: A Microlens Planet Orbiting an Ultracool

Dwarf?" The Astronomical Journal, 159(3), 116.

1. Yang, H., Zhang, X., et al. (2020). KMT-2016-BLG-1836Lb: A Super-Jovian Planet from a High-cadence Microlensing Field. The Astronomical Journal, 159(3), 98.

OBSERVING TIME

Approved proposals as PI:

2. The Green Bank Telescope (GBT), K-band (18-26.5 GHz), 30.0 h.
   Detecting HC_3N in M31: Verifying Extragalactic In-Situ PAH Formation.
   Group A, Linear Ranked Score: 2.41 / 10.
1. The Green Bank Telescope (GBT), K-band (18-26.5 GHz), 5.0 h.
   Tracers of PAH formation at the edges of molecular clouds: source verification.
   Group A, Linear Ranked Score: 0.65 / 10.

DATASETS PUBLISHED

"XPPARAMS" – Parameters of 220 million stars from Gaia BP/RP spectra, available on zenodo and GAVO

"R(V) in 3D" – Precise determination of extinction R(V) for over 130 million stars, available on zenodo.

SELECTED HIGHLIGHTS OR RECOGNITIONS

5. Ernst Patzer Award: (2025)
I was honored with the Ernst Patzer Award, recognizing the best refereed publications by junior scientists at MPIA and the Zentrum für Astronomie, Heidelberg University (ZAH).

4. Cover Article in *Science* (2025):
My work on three-dimensional dust mapping was selected as the cover paper of *Science*.

3. Interview in *Sterne und Weltraum* (2025):
Featured in the leading popular astronomy magazine in the German-speaking world.

2. Coverage on China Central Television (CCTV, 2025):
Featured in a national news report by the most widely viewed broadcaster in the Chinese-speaking world. Link to news report.

1. MPIA Press Release (2025):
highlighting my work on 3D dust mapping. Link to release.

SELECTED PRESENTATIONS & SEMINAR

(Place, Title, Time)

7. Harvard CfA: Mapping dust extinction beyond stellar color. October 2025.

6. MIT Chemistry: Searching for interstellar organics in translucent dust clouds, October 2025.

5. LBNL/Berkeley: DESI lunch talk, 3D Dust mapping and Interstellar organics, October 2025.

4. Stanford: KIPAC Tea talk, An all-sky 3D dust R(V) map of the Milky Way: Insights into Interstellar Organics. September 2025.

3. Université Paris-Saclay Interstellar Institute: 3D dust mapping and its implications for interstellar organics. July 2025.

2. NAOC Invited talk: Mapping $R(V)$ in 3D in the Milky Way, LMC and SMC. March 2025.

1. Caltech: R(V) variation in 3D and its implications for dust evolution, June 2024

OUTREACH AND SERVICE

Referee for MNRAS (Since 2023)

Referee for AAS (APJ/APJS/AJ/...) (Since 2024)

Local Organizing Committee member for the conference:

New Computational Methods in Milky Way Dynamics and Structure

Ringberg Castle, Bavaria, July, 2024

LEADERSHIP

Vice president of Students' Union (2019-2021)

Department of physics, Tsinghua University

TEACHING EXPERIENCE

Teaching Assistant, Introduction to astronomy @ Universität Heidelberg, 2023 Spring & Fall.