# ZEFENG LI

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## EDUCATION & EMPLOYMENT

**Postdoctoral Research Associate, Durham University** Oct 2023 - present

**Ph.D., Astronomy & Astrophysics, Australian National University** Oct 2019 - Aug 2023
Thesis: *metallicity correlations in galaxies* Advisor: Mark R. Krumholz & Emily Wisnioski

**Algorithm Engineer, Cloudwalk Technology** Oct 2018 - May 2019

**B.S., Physics, Astronomy, Peking University** Sept 2013 - Jul 2017

## VISITING EXPERIENCES

**Summer Research, Australian National University** Oct 2017 - Jan 2018

**Undergraduate Visiting Research, University of Arizona** Mar 2016 - Jul 2016

## CONFERENCES & TALKS

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|---|---|
| Seminar talk at THU | Beijing, May 2025 |
| **Invited talk** at University of Leicester | Leicester (remote), Mar 2025 |
| Seminar talk at USTC | Hefei, Dec 2024 |
| Contributed talk, ESO-SKA conference | Busselton, Dec 2024 |
| Friday lunck talk at Durham University | Durham, Nov 2024 |
| Contributed talk, METALS 2023 | Santiago (remote), Nov 2023 |
| Seminar talk at PKU / KIAA | Beijing, Sept 2023 |
| Seminar talk at JLU | Changchun, Sept 2023 |
| Seminar talk at SHAO | Shanghai, Sept 2023 |
| Seminar talk at NJU | Nanjing, Sept 2023 |
| Seminar talk at UWA / ICRAR | Perth, Apr 2023 |
| Attendee, CSST workshop | Beijing (remote), Jul 2022 |
| Poster, From Stars to Galaxies II | Gothenburg, Jun 2022 |
| Oral talk, star formation group meeting at SHAO | Shanghai (remote), Jan 2022 |
| Poster, KIAA Forum on Gas in Galaxies | Beijing (remote), Nov 2021 |
| Poster, MOS-Galaxy STScI workshop | Baltimore (remote), May 2021 |
| Contributed talk, Annual Conference of the Chinese Astronomical Society | Wuhan, Nov 2016 |

## PROFESSIONAL EXPERIENCE

### Collaboration

- Co-I, MUSE large program of star formation and AGN in the JELS-COSMOS field
- Co-I, JWST Emission Line Survey (JELS)
- member, MUSE-ALMA Unveiling the Virgo Environment (MAUVE)

### Computation

- Python packages ADABIN (adaptive binning) and METCORR (two-point correlation computation)
- Enterprise-class machine learning / deep learning (convolutional neural network)

**Observation**

- Very Large Telescope (remote): $> 20$ nights
- Multiple Mirror Telescope: 5 nights
- 2-m class telescopes (Bok Telescope, Siding Spring 2.3m Telescope): 18 nights

**Tutorial**

- PHYS1122 (2024-25 academic year): Foundations of Physics

**Community service**

- Isaac Newton Telescope Group anonymous proposal review

## AWARDS

| | |
|---|---|
| RSAA HDR travel fund (A$5,000) | Australian National University, Dec 2022 |
| ASTRO 3D travel fund (A$3,000 in total) | Australian National University, Dec 2022 |
| Vice Chancellor travel fund (A$1,500) | Australian National University, Dec 2022 |
| Summer Research Scholarship (A$2,000) | Australian National University, Oct 2017 |
| Weiming Scholarship for outstanding thesis (top 10%) | Peking University, Jul 2017 |
| Lin-Qiao Scholarship for outstanding undergraduate research (top 20%) | Peking University, Oct 2016 |
| Shenkeqi Scholarship (top 30%) | Peking University, Sept 2014 |

## PUBLICATIONS

All the papers can be found in my ADS library or ORCID homepage (**citations > 500, h-index = 12**).

### Corresponding-author

- (9) **Li, Z.**, Dudzevičiūtė, U., Puglisi, A., Gillman, S., Swinbank, A. M., Cortese, L., Smail, I., McLeod, A. F., Glazebrook, K., Taylor, D. J., Bacon, R., Harrison, C., Ibar, E., Molina, J., Obreschkow, D., Theuns, T. 2025, in submission
  *KURVS: chemical properties from multiple strong line calibrations for star-forming galaxies at* $z \sim 1.5$
- (8) Chen, Q.-H., Garcia, A. M., Grasha, K., Wisnioski, E., **Li, Z.**, Torrey, P., Remus, R.-S., Kimmig, L. C., Battisti, A., Buder, S. 2025, in submission
  *Environmental effects on stellar age azimuthal variation in spiral galaxies in Auriga simulations*
- (7) **Li, Z.**, Krumholz, M. R., McLeod, A. F., Swinbank, A. M., Wisnioski, E., Mendel, J. T., Belfiore, F., Cresci, G., Venturi, G., Kang, J. 2025, ApJL
  *Element nucleosynthetic origins from abundance spatial distributions beyond the Milky Way*
- (6) Zhang, C., **Li, Z.**, Hu, Z., Krumholz, M. R. 2025, MNRAS, 540, 3906 (2 citations)
  *Understanding the Mechanisms Behind the Distribution of Galactic Metals*
- (5) Li, S.-L., **Li, Z.**, Wisnioski, E., Krumholz, M. R., Sánchez, S. F. 2024, MNRAS, 536, 430 (2 citations)
  *Comparing metallicity correlations in nearby non-AGN and AGN-host galaxies*
- (4) **Li, Z.**, Grand, R. J. J., Wisnioski, E., Mendel, J. T., Krumholz, M. R., Ting, Y.-S., Pakmor R., Fragkoudi, F., Gómez, F. A., Marinacci, F., Ciucă, I. 2024, MNRAS, 528, 7103 (2 citations)
  *Cosmological evolution of metallicity correlation functions from the Auriga simulations*
- (3) **Li, Z.**, Wisnioski, E., Mendel, J. T., Krumholz, M. R., Kewley, L. J., López-Cobá, C., Sánchez, S. F., Anderson, J. P., Galbany, L. 2023, MNRAS, 518, 286 (17 citations)
  *Spatial metallicity distribution statistics at* $\sim 100$ *pc scales in the AMUSING++ nearby galaxy sample*
- (2) **Li, Z.**, Krumholz, M. R., Wisnioski, E., Mendel, J. T., Kewley, L. J., Sánchez, S. F., Galbany, L. 2021, MNRAS, 504, 5496 (20 citations)
  *Detection of metallicity correlations in 100 nearby galaxies*
- (1) **Li, Z.**, McGreer, I. D., Wu, X.-B., Fan, X., Yang, Q. 2018, ApJ, 861, 6 (24 citations)
  *The Ensemble Photometric Variability of Over* $10^5$ *Quasars in the Dark Energy Camera Legacy Survey and the Sloan Digital Sky Survey*

### Co-author

- (20) Duncan, K. J. et al. (including **Li, Z.**) 2025, MNRAS
  *The JWST Emission Line Survey (JELS): Extending rest-optical narrow-band emission line selection into the Epoch of Reionization*
- (19) Pirie, C. A. et al. (including **Li, Z.**) 2025, MNRAS
  *The JWST Emission Line Survey (JELS): An untargeted search for Hα emission line galaxies at* $z > 6$ *and their physical properties*
- (18) Myszka, A. et al. (including **Li, Z.**) 2025, MNRAS, 540, 919
  *Exploring the chemical content of Galaxies using the SAMI Zoom Survey: a data release of 92 spatially resolved HII regions in nearby galaxies*
- (17) Taylor, D. J. et al. (including **Li, Z.**) 2025, MNRAS, 536, 1149
  *The properties of the interstellar medium in dusty, star-forming galaxies at* $z \sim$*2-4: The shape of the CO spectral line energy distributions*
- (16) Zhu, Z., **Li, Z.**, Campbell, I. H., Cawood, P. A., Lu, N., Nebel, O. 2024, Earth and Planetary Science Letters, 648, 119070
  *Quantifying the loss of continental crust into the mantle from mass/volume balance in modern collisional mountains*

- (15) Chen, Q.-H. et al. (including **Li, Z.**) 2024, MNRAS, 534, 883
  *Quantifying the azimuthal variations in the interstellar medium in the spiral galaxies with the TYPHOON survey*
- (14) Shen, Y. et al. (including **Li, Z.**) 2024, ApJS, 272, 26
  *The Sloan Digital Sky Survey Reverberation Mapping Project: Key Results*
- (13) Li, S.-L. et al. (including **Li, Z.**) 2024, MNRAS, 529, 4993
  *The mass-metallicity and fundamental metallicity relations in non-AGN and AGN-host galaxies*
- (12) Chen, Q.-H. et al. (including **Li, Z.**) 2024, MNRAS, 527, 2991
  *The MAGPI Survey: Effects of Spiral Arms on Different Tracers of Interstellar Medium at $z \sim 0.3$*
- (11) Zhu, Z. et al. (including **Li, Z.**) 2023, Geochimica et Cosmochimica Acta, 346, 133
  *Evolution of the preserved European continental crust, constrained by U-Pb, O and Hf isotopic analyses of river detrital zircons*
- (10) Di, Y., **Li, Z.**, Amelin, Y. 2021, Journal of Analytical Atomic Spectrometry, 36: 1489-1502
  *Monitoring and quantitative evaluation of Faraday cup deterioration using multidynamic isotope analyses of laboratory standards*
- (9) Kinemuchi, K. et al. (including **Li, Z.**) 2020, ApJS, 250, 10
  *The Sloan Digital Sky Survey Reverberation Mapping Project: Photometric g and i Light Curves*
- (8) Di, Y. et al. (including **Li, Z.**) 2020, American Mineralogist, 105 (2): 149-161
  *Original Water Content of Potassic Basalts from the Cenozoic Wudalianchi-Erkeshan-Keluo Volcanic Field, Northern China*
- (7) Wolf, C. et al. (including **Li, Z.**) 2020, MNRAS, 491, 1970
  *Ultra-luminous quasars at redshift $z > 4.5$ from SkyMapper*
- (6) Grier, C. J. et al. (including **Li, Z.**) 2019, ApJ, 887, 1
  *The Sloan Digital Sky Survey Reverberation Mapping Project: Initial CIV Lag Results from Four Years of Data*
- (5) Zou, H. et al. (including **Li, Z.**) 2019, ApJS, 245, 4
  *The Third Data Release of the Beijing-Arizona Sky Survey*
- (4) Shen, Y. et al. (including **Li, Z.**) 2019, ApJ, 883, 14
  *The Sloan Digital Sky Survey Reverberation Mapping Project: Improving Lag Detection with an Extended Multi-Year Baseline*
- (3) Zou, H. et al. (including **Li, Z.**) 2017, AJ, 153, 276
  *The First Data Release of the Beijing-Arizona Sky Survey*
- (2) Wang, F. et al. (including **Li, Z.**) 2017, ApJ, 839, 27
  *First Discoveries of $z > 6$ Quasars with the DECam Legacy Survey and UKIRT Hemisphere Survey*
- (1) Yang, J. et al. (including **Li, Z.**) 2017, AJ, 153, 184
  *Discovery of 16 New $z \sim 5.5$ Quasars: Filling in the Redshift Gap of Quasar Color Selection*