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

RESEARCH INTERESTS

Galactic baryonic cycle, chemical evolution, kinematic property, dark matter halo
Integrated field spectroscopy, optical and near infrared imaging

PROFESSIONAL EXPERIENCE

Observing Proposals PI ∼£300,000 in total

· VLT/KMOS (60 hr, 4.8× over-subscribed): KMOS Cosmic nOON (KOCOON) spectroscopic survey

Collaboration Co-I or member

· Co-I, MUSE large program of star formation and AGN in the JELS-COSMOS field (MUSE-JELS)
· 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 and deep learning (convolutional neural network)

Telescope operation

· Multiple Mirror Telescope: 5 nights
· Bok Telescope: 14 nights
· Siding Spring Observatory 2.3m Telescope: 4 nights

Community service

· Isaac Newton Telescope Group anonymous proposal review

Tutorial

· PHYS1122: Foundations of Physics Durham University, 2024 – 2025

CONFERENCES & TALKS

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 lunch 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

AWARDS & GRANTS

PI of the VLT (KMOS) observing proposal (∼£300,000)	Durham University, Jul 2025
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) 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
- (8) **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, MNRAS
  KURVS: chemical properties from multiple strong line calibrations for star-forming galaxies at $z \sim 1.5$
- (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.-L. 2025, ApJL, 987, L28
  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 ~ 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

- (22) Krumholz, M. R., Ting, Y.-S., **Li, Z.**, Zhang, C. 2025, in preparation
  Metallicity fluctuation statistics in the interstellar medium and young stars – II. Elemental cross-correlations and the structure of chemical abundance space
- (21) Stephenson, H. M. O. et al. (including **Li, Z.**) 2025, in submission
  The JWST Emission Line Survey (JELS): The sizes and merger fraction of star-forming galaxies during the Epoch of Reionization
- (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 ∼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 ∼ 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 ~ 5.5 *Quasars: Filling in the Redshift Gap of Quasar Color Selection*