Zhiwei Pan

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Education

Peking University, Beijing, China *September 2019 - Present*
Ph.D. candidate, Department of Astronomy
Advisor: Professor Linhua Jiang

Peking University, Beijing, China *September 2015 - June 2019*
B.S., School of Physics
Advisor: Professor Linhua Jiang

Research Interests

- High-redshift quasar and galaxy
- Supermassive black hole
- AGN and host galaxy
- Large surveys, data mining, and machine learning

Research Skills

- Data reduction and analysis of large datasets from SDSS, DESI, and JWST
- Simulation and spectroscopic fitting techniques for quasars
- Application of unsupervised and supervised machine learning methods

Collaborations

- The Dark Energy Spectroscopic Instrument (DESI, [Link]): Member
- JWST+ALMA ASPIRE collaboration ([Link]): Member
- JWST EREBUS collaboration for studying black holes in the early universe: Member
- China Space Station Telescope (CSST) PKU Science Center: Member

Awards and Honors

- 2022 - 2023: First Price Scholarship and Merit Student
- 2021 - 2022: **Chinese National Scholarship** (top 1%) and Merit Student
- 2020 - 2021: President's Ph.D. Scholarship (top 5%) and First Price Scholarship
- 2019 - 2020: President's Ph.D. Scholarship and Merit Student

Service and Teaching

- Sept. 2021 - June 2023: Co-organizer of CSST AGN & Galaxy Discussion (weekly), Peking University
- July 2022 - Aug. 2022: Teaching Assistant in the CSST Summer School, Peking University
- Dec. 2019 - Aug. 2022: Visual identification of spectra for DESI Survey Validation
- Apr. 2021: Data Quality Scientist for DESI Survey Validation in two shifts (eight nights)

- Sept. 2020 - Jan. 2021: Supervising Jiaheng Han, undergraduate at Peking University
- Sept. 2020 - Jan. 2021: Teaching Assistant in Fundamental Astronomy, Peking University

Talks

- Sept. 2023, Talk, the Chinese Astronomical Society 2023 Annual Meeting (Weihai, China), "Quasar Census: Luminosity Function & Black Hole Mass Estimation"
- July 2023, Talk, the Academic Seminar on Multi-wavelength Studies of Quasars and Active Galactic Nuclei (Lijiang, China), "Black Hole Mass Estimation for DESI Quasars at $0.25 < z < 0.8$"
- May 2023, **Invited Talk**, the DoA special seminar of Tsinghua University (Beijing, China), "Quasar Luminosity Function & Single-Epoch Black Hole Mass Estimation",
- Dec. 2022, Talk (**First Price**), the ninth forum of Physics Five Universities, the National Top (online), "Quasar UV Luminosity Function at $3.5 < z < 5.0$ from SDSS Deep Imaging Data"
- Nov. 2022, Talk, the CSST AGN & Galaxy Discussion of Peking University (Beijing, China), "Overview of the Dark Energy Spectroscopic Instrument (DESI): from Survey to Science"
- June 2022, Talk, the CSST AGN & Galaxy Discussion of Peking University (Beijing, China), "The slitless spectroscopy science with emission (absorptions) lines"
- May 2021, Talk, the CSST AGN & Galaxy Discussion of Peking University (Beijing, China), "Overview of Quasar Luminosity Function"

Outreach

- May 2024 - Present: Consultant for astronomy popularization products at the Shanghai Science and Technology Museum
- Aug. 2023: Advisor of the 2023 Outstanding High School Students Summer School (Astronomy), Peking University
- Sept. 2019 - Jan. 2020: Co-organizer of Astro-Night (weekly), Peking University
- Sept. 2015 - Present: Have given 5+ talks to the general public, including high-school students and school children

Publication List

ADS Bibliography

- My ADS Library: [Link]
- Total refereed/under-review papers: 19
- Total citations: >800
- h-index: 9

First and Second Authored Publications

- Guo, W.-J., **Pan, Z.**, Siudek, M., et al. 2024, arXiv, The first identification of Lyman Changing-look Quasars at high-redshift in DESI [ADS]
- **Pan, Z.**, Jiang, L., Guo, W., et al. submitted to ApJ, Iron-corrected Single-epoch Black Hole Masses of DESI Quasars at low redshift
- Jiang L., **Pan, Z.**, Aguilar J. N., et al. 2024, ApJ, 968, 120, Constraints on the Spacetime Variation of the Fine-structure Constant Using DESI Emission-line Galaxies [ADS]
- **Pan, Z.**, Jiang, L., Fan, X., Wu, J., Yang, J. 2022, ApJ, 928, 172, Quasar UV Luminosity Function at $3.5 < z < 5.0$ from SDSS Deep Imaging Data [ADS]

Other Publications

- Lin, X., Wang, F., Fan, X., ..., **Pan, Z.**, et al. 2024, ApJ, 974, 147, Constraints on the Spacetime Variation of the Fine-structure Constant Using DESI Emission-line Galaxies [ADS]
- Liu, W., Fan, X., Yang, J., ..., **Pan, Z.**, et al. 2024, arXiv, Fast Outflow in the Host Galaxy of the Luminous z = 7.5 Quasar J1007+2115 [ADS]
- Siudek, M., Pucha, R., Mezcua, M., ..., **Pan, Z.**, et al. 2024, arXiv, Value Added Catalog of physical properties of more than 1.3 million galaxies from the DESI Survey [ADS]
- DESI Collaboration, Adame, A. G., Aguilar, J., ..., **Pan, Z.**, et al. 2024, AJ, 168, 58, The Early Data Release of the Dark Energy Spectroscopic Instrument [ADS]
- Guo, W.-J., Zou, H., Greenwell, C. L., Alexander, D. M., Fawcett, V. A., **Pan, Z.**, et al. 2024, arXiv, Changing-look Active Galactic Nuclei from the Dark Energy Spectroscopic Instrument. II. Statistical Properties from the First Data Release [ADS]
- Li, W., Inayoshi, K., Onoue, M., He, W., Matsuoka, Y., **Pan, Z.**, et al. 2024, ApJ, 969, 69, Reconstruction of Cosmic Black Hole Growth and Mass Distribution from Quasar Luminosity Functions at $z > 4$: Implications for Faint and Low-mass Populations in JWST [ADS]
- Jiang, L., Fu, S., Wang, F., Bosman, S. E. I., Cai, Z., Jun, H. D., **Pan, Z.**, et al. 2024, arXiv, Constraints on the variation of the fine-structure constant at $3 < z < 10$ with JWST emission-line galaxies [ADS]
- Juneau, S., Canning, R., Alexander, D. M., ..., **Pan, Z.**, et al. 2024, arXiv, Identifying Quasars from the DESI Bright Galaxy Survey [ADS]
- DESI Collaboration, Adame, A. G., Aguilar, J., ..., **Pan, Z.**, et al. 2024, AJ, 167, 62, Validation of the Scientific Program for the Dark Energy Spectroscopic Instrument [ADS]
- Guo, W.-J., Zou, H., Fawcett, V. A., ..., **Pan, Z.**, et al. 2024, ApJS, 270, 26, Changing-look Active Galactic Nuclei from the Dark Energy Spectroscopic Instrument. I. Sample from the Early Data [ADS]

- Fu, S., Jiang, L., Ning, Y., Liu, W., **Pan, Z.** 2024, arXiv, The Magellan M2FS spectroscopic survey of high-redshift galaxies: the brightest Lyman-break galaxies at $z \sim 6$ [ADS]
- Zou, S., Jiang, L., Cai, Z., Moustakas, J., Sun, Z., **Pan, Z.**, et al. 2024, ApJ, 960, 34, DESI Survey Validation Data in the COSMOS/Hyper Suprime-Cam Field: Cool Gas Trace Main-sequence Star-forming Galaxies at the Cosmic Noon [ADS]
- Yang, J., Wang, F., Fan, X., ..., **Pan, Z.**, et al. 2023, ApJL, 951, L5, A SPectroscopic Survey of Biased Halos in the Reionization Era (ASPIRE): A First Look at the Rest-frame Optical Spectra of z > 6.5 Quasars Using JWST [ADS]
- Alexander, D. M., Davis, T. M., Chaussidon, E., ..., **Pan, Z.**, et al. 2023, AJ, 165, 124., The DESI Survey Validation: Results from Visual Inspection of the Quasar Survey Spectra [ADS]
- DESI Collaboration, Abareshi, B., Aguilar, J., ..., **Pan, Z.**, et al. 2022, AJ, 164, 207, Overview of the Instrumentation for the Dark Energy Spectroscopic Instrument [ADS]