

# Shu Wang

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## Research Identity

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**Research interests:** active galactic nuclei, quasars, & super massive black holes;

**Specialization:** spectral analysis of large sample and multi-epoch survey; High redshift galaxies  
Quasar selection

**Collaboration:** SAMP; LSST Data Right Holder.

## Employment

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SNU Science Fellowship, Seoul National University, Korea	2022–present
Post-Doctoral fellowship, Seoul National University, Korea	2020–2022
Visiting scholar, University of Illinois at Urbana-Champaign, U.S.	2017–2018

## Education

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Ph.D., Department of Astronomy, Peking University, China	2014–2020
B.S., Department of Astronomy, Peking University, China	2010–2014

## Honours and Awards

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Seoul National University Science Fellowship, Seoul National University	2022
Chinese Scholarship Council Fellowship, Peking University	2017

## Approved Observing Programs

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### Gemini

- **PI**, "Investigation the AGN Size– Luminosity Relation with Uniquely Selected High-Luminosity Quasars", 2022A-2024A, in total 60 hours
  - **PI**, "Searching for changing look AGNs using variability features in the light curves", 2022A Fast-turnaround, 8.4 hrs
  - **PI**, "Searching for Changing Look AGNs using ZTF light curves", 2022B, 5.0 hrs
  - **PI**, "Follow-up of the first triple broad-line and radio-emitting AGN system at kpc-scale", 2023B, Fast-turnaround, 2.7 hrs
- MDM 2.4m/1.3 m, CoI**, "Investigation of high luminosity end R–L relation", 2021B-2024A, in total 30 observation blocks
- LOAO 1m, Co-I**, "Investigation of high luminosity end R–L relation", 2021B-2024A, in total ~ 60 nights

## Teaching experience

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Guest lecturer, Seoul National University	2023
Teaching Assistant, <i>Astronomical Spectroscopy</i> , Peking University	2019–2020

## Observing experience

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MDM 1.3m, remote observation, 1 nights	2021
Lick 3m, remote observation, 5 nights	2021
Xinglong 2.16m, 14 nights	2016
Lijiang 2.4m, 6 nights	2016
Palomar 5m, 3 nights	2015
Bok 2.3m, 14 nights	2015

## Academic Service

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Journal referee of ApJL	
Workshop organization, East-Asia AGN Workshop, Changchun, China	2015

## Outreach experience

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Supervisor of the Astronomical Summer Camp for high-school students, Peking University	2015
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## Talks, posters and Colloquiums

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<b>Colloquium talk</b> , Seoul National University, Korea	2022
Talk, <i>COSPAR 2024</i> , Busan, Korea	(July 2024)
Talk, <i>East-Asia AGN Workshop</i> , Kagoshima, Japan (Online)	Sep 2023
Talk, <i>Restless Nature of AGN: 10 years later</i> , Naples, Italy	Jun 2023
Talk, <i>241<sup>st</sup> Meeting of the American Astronomical Society</i> , Seattle, U.S.	Jan 2023
Talk, <i>XXXI<sup>st</sup> General Assembly of International Astronomical Union</i> , Busan, Korea	Aug 2022
Talk, <i>Korean Astronomical Society Meeting</i> , Gyeongju, Korea,	May 2022
Talk, <i>13<sup>th</sup> Jing-Guang-Xia Astrophysics Seminar</i> , Nanning, China	Nov 2019
Talk, <i>Cosmic Evolution of Quasars: From the first light to Local Relics</i> , Beijing, China	Oct 2019
Talk, <i>Chinese Astronomical Society Annual Conference</i> , Delingha, China	Sep 2019
Talk, <i>Guo Shoujing Academic Seminar</i> , Xiamen, China	May 2019
Poster, <i>Mapping Central Regions of Active Galactic Nuclei</i> , Guilin, China	Sep 2019
Poster, <i>Astrophysical Frontiers in the Next Decade and Beyond</i> , Portland, U.S.	Jun 2018

## List of publications

### ADS publication records

Summary: 24 papers with 23 peer-reviewed, 1 open-source software, 1000+ citations, h-index = 16 (see [ADS library](#))

### Primary Contribution Paper

- [1] **Wang, S.**, Woo, J.-H., et al. **ApJ**, 2024, to be submitted, *Seoul National University AGN Monitoring Project. V. Velocity-resolved reverberation mapping and evidence of BLR kinematic evolution*
- [2] **Wang, S.**, & Woo, J.-H., **ApJS**, 2024, submitted. *Revisiting the  $H\beta$  size–luminosity relation using an uniform lag analysis*
- [3] **Wang, S.**, Woo, J.-H., et al. 2024, **ApJ**, 966, 128, *Identifying changing-look AGNs using optical variability characteristic*, DOI: [10.3847/1538-4357/ad3049](https://doi.org/10.3847/1538-4357/ad3049)
- [4] Woo, J.-H., **Wang, S.**<sup>†</sup>, et al., 2024, **ApJ**, 962, 67, *Seoul National University AGN Monitoring Project. III. Final  $H\beta$  reverberation results and size–luminosity relation*, DOI: [10.3847/1538-4357/ad132f](https://doi.org/10.3847/1538-4357/ad132f)
- [5] **Wang, S.**, Guo, H., Woo, J.-H., 2023, **ApJL**, 948, L23, *Estimating AGN Black Hole Masses via Continuum Reverberation Mapping in the Era of LSST*, DOI: [10.3847/2041-8213/accf96](https://doi.org/10.3847/2041-8213/accf96)
- [6] Guo, H., Barth, A. J., & **Wang, S.**, 2022, **ApJ**, 940, 20, *Active Galactic Nuclei Continuum Reverberation Mapping Based on Zwicky Transient Facility Light Curves*, DOI: [10.3847/1538-4357/ac96ec](https://doi.org/10.3847/1538-4357/ac96ec)
- [7] **Wang, S.**, Jiang, L., Shen, Y., et al. 2022, **ApJ**, 925, 121, *Metallicity in Quasar Broad Line Regions at Redshift  $\sim 6$* , DOI: [10.3847/1538-4357/ac3a69](https://doi.org/10.3847/1538-4357/ac3a69)
- [8] Jiang, L., **Wang, S.**, et al. 2021, **Nature Astronomy**, 5, 262. *A possible bright ultraviolet flash from a galaxy at redshift  $z \approx 11$* , DOI: [10.1038/s41550-020-01266-z](https://doi.org/10.1038/s41550-020-01266-z)
- [9] Jiang, L., Kashikawa, N., **Wang, S.**, et al. 2021, **Nature Astronomy**, 5, 256, *Evidence for GN-z11 as a luminous galaxy at redshift 10.957*, DOI: [10.1038/s41550-020-01275-y](https://doi.org/10.1038/s41550-020-01275-y)
- [10] **Wang, S.**, Shen, Y., Jiang, L., et al. 2020, **ApJ**, 903, 51, *The Sloan Digital Sky Survey Reverberation Mapping Project: How Broad Emission Line Widths Change When Luminosity Changes*, DOI: [10.3847/1538-4357/abb36d](https://doi.org/10.3847/1538-4357/abb36d)
- [11] **Wang, S.**, Shen, Y., Jiang, L., et al. 2019, **ApJ**, 882, 4, *The Sloan Digital Sky Survey Reverberation Mapping Project: Low-ionization Broad-line Widths and Implications for Virial Black Hole Mass Estimation*, DOI: [10.3847/1538-4357/ab322b](https://doi.org/10.3847/1538-4357/ab322b)

### Other Contributed Paper

- [1] Ren, W., et al. 2024, **ApJ**, submitted, *Prior-Informed AGN-Host Spectral Decomposition Using PyQSOFit*, DOI: [10.48550/arXiv.2405.11750](https://doi.org/10.48550/arXiv.2405.11750)
- [2] Zuo, W., et al. 2024, **ApJ**, submitted, *The Intermediate-Mass Black Hole Reverberation Mapping Project: Initial Results for a candidate IMBH in a nearby Seyfert 1 Galaxy*, DOI: [10.48550/arXiv.2405.11750](https://doi.org/10.48550/arXiv.2405.11750)

- [3] Mandal, A. K., Woo, J.-H., **Wang, S.**, et al. 2024, **ApJ**, submitted, *Continuum Reverberation Mapping in High-Luminosity AGNs: Insights from the Seoul National University AGN Monitoring Project (SAMP)*.
- [4] Mandal, A. K., Woo, J.-H., **Wang, S.**, et al. 2024, **ApJ**, in-press, *Mid-infrared Reverberation Mapping: Revisiting the Dust Torus Size–Luminosity Relationship in AGN*, DOI: [10.48550/arXiv.2403.01885](https://doi.org/10.48550/arXiv.2403.01885)
- [5] Cho, H., Woo, J.-H., **Wang, S.**, et al. 2023, **ApJ**, 953, 142, *The Seoul National University AGN Monitoring Project IV: H $\alpha$  reverberation mapping of 6 AGNs and the H $\alpha$  Size–Luminosity Relation*, DOI: [10.3847/1538-4357/ace1e5](https://doi.org/10.3847/1538-4357/ace1e5)
- [6] Ayubinia, A., et al. 2023, **ApJ**, 951, 7, *Investigation of Stellar Kinematics and Ionized gas Outflows in Local [U]LIRGs*, DOI: [10.3847/1538-4357/accf18](https://doi.org/10.3847/1538-4357/accf18)
- [7] Wu, J., et al. 2022, **MNRAS**, 517, 2659, *Demographics of  $z \sim 6$  quasars in the black hole mass–luminosity plane*, DOI: [10.1093/mnras/stac2833](https://doi.org/10.1093/mnras/stac2833)
- [8] Guo, H., et al. 2020, **ApJ**, 905, 52. *High-redshift Extreme Variability Quasars from Sloan Digital Sky Survey Multiepoch Spectroscopy*, DOI: [10.3847/1538-4357/abc2ce](https://doi.org/10.3847/1538-4357/abc2ce)
- [9] Guo, H., et al. 2020, **ApJ**, 888, 58. *Understanding Broad Mg II Variability in Quasars with Photoionization: Implications for Reverberation Mapping and Changing-look Quasars*, DOI: [10.3847/1538-4357/ab5db0](https://doi.org/10.3847/1538-4357/ab5db0)
- [10] Zou, H., et al. 2019, **ApJS**, 245, 4, *The Third Data Release of the Beijing-Arizona Sky Survey*, DOI: [10.3847/1538-4365/ab48e8](https://doi.org/10.3847/1538-4365/ab48e8)
- [11] Guo, H., et al. 2019, **ApJL**, 883, L44, *Discovery of an Mg II Changing-look Active Galactic Nucleus and Its Implications for a Unification Sequence of Changing-look Active Galactic Nuclei*, DOI: [10.3847/1538-4357/ab5db0](https://doi.org/10.3847/1538-4357/ab5db0)
- [12] Shen, Y., et al. 2019, **ApJS**, 241, 34, *The Sloan Digital Sky Survey Reverberation Mapping Project: Sample Characterization*, DOI: [10.3847/1538-4365/ab074f](https://doi.org/10.3847/1538-4365/ab074f)
- [13] Zou, H., et al. 2017, **AJ**, 153, 276, *The First Data Release of the Beijing-Arizona Sky Survey*, DOI: [10.3847/1538-3881/aa72d9](https://doi.org/10.3847/1538-3881/aa72d9)
- [14] Yang, J., et al. 2017, **AJ**, 153, 184, *Discovery of 16 New  $z \sim 5.5$  Quasars: Filling in the Redshift Gap of Quasar Color Selection*, DOI: [10.3847/1538-3881/aa6577](https://doi.org/10.3847/1538-3881/aa6577)
- [15] Jiang, L., et al. 2016, **ApJ**, 833, 222, *The Final SDSS High-redshift Quasar Sample of 52 Quasars at  $z > 5.7$* , DOI: [10.3847/1538-4357/833/2/222](https://doi.org/10.3847/1538-4357/833/2/222)
- [16] Yang, J., et al. 2016, **ApJ**, 829, 33, *A Survey of Luminous High-redshift Quasars with SDSS and WISE. II. the Bright End of the Quasar Luminosity Function at  $z \approx 5$* , DOI: [10.3847/0004-637X/829/1/33](https://doi.org/10.3847/0004-637X/829/1/33)
- [17] Wang, F., et al. 2016, **ApJ**, 819, 24, *A Survey of Luminous High-redshift Quasars with SDSS and WISE. I. Target Selection and Optical Spectroscopy*, DOI: [10.3847/0004-637X/819/1/24](https://doi.org/10.3847/0004-637X/819/1/24)
- [18] Zou, H., et al., 2015, **PASP**, 127, 94, *Capability of Quasar Selection by Combining SCUSS and SDSS Observations*, DOI: [10.1086/680212](https://doi.org/10.1086/680212)

## Code

- [1] Guo, H., Shen, Y., **Wang, S.** 2018, ASCL, 1809.008, 58. *PyQSOFit: Python code to fit the spectrum of quasars*