Shu Wang

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Research Identity

Research interests: active galactic nuclei, quasars, & super massive black holes; reverberation mapping; changing-look AGNs; high-redshift AGNs
Specialization: large sample and time series spectral analysis
Collaboration: SAMP; LSST Data Right Holder.

Employment

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

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

Honours and Awards

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

Approved Observing Programs

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 recurrent changing-look AGNs"*, 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 $\sim$ 60 nights

Teaching experience

Guest lecturer, Seoul National University	2023
Teaching Assistant, *Astronomical Spectroscopy*, Peking University	2019–2020

Observing experience

MDM 1.3m, remote observation, 3 nights	2021/2024
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

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

Outreach experience

Supervisor of the Astronomical Summer Camp for high-school students, Peking University	2015

Talks, posters and Colloquiums

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

List of publications

ADS publication records

*Summary: **27** papers with **24** 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, in prep., *Seoul National University AGN Monitoring Project. VI. Dynamical modelling of ∼10 SAMP AGNs*

[2] **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 Kinematic Evolution*

[3] **Wang, S.,** & Woo, J.-H., **ApJS**, 2024, in press. *Revisiting the Hβ Size–Luminosity Relation Using a Uniform Lag Analysis* , DOI: 10.48550/arXiv.2408.15872

[4] **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

[5] Woo, J.-H., **Wang, S.**†, et al., 2024, **ApJ**, 962, 67, *Seoul National University AGN Monitoring Project. III. Final Hβ reverberation results and size–luminosity relation*, DOI: 10.3847/1538-4357/ad132f

[6] **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

[7] 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

[8] **Wang, S.**, Jiang, L., Shen, Y., et al. 2022, **ApJ**, 925, 121, *Metallicity in Quasar Broad Line Regions at Redshift* ~ 6, DOI: 10.3847/1538-4357/ac3a69

[9] Jiang, L., **Wang, S.**, et al. 2021, **Nature Astronomy**, 5, 262. *A possible bright ultraviolet flash from a galaxy at redshift z≈11*, DOI: 10.1038/s41550-020-01266-z

[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

[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

Other Contributed Paper

[1] Ren, W., et al. 2024, **ApJ**, in press, *Prior-Informed AGN-Host Spectral Decomposition Using PyQSOFit*, DOI: 10.48550/arXiv.2405.11750

[2] Zuo, W., et al. 2024, **ApJ**, in press, *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

[3] Mandal, A. K., Woo, J.-H., **Wang, S.**, et al. 2024, **ApJ**, 968, 59, *Mid-infrared Reverberation Mapping: Revisiting the Dust Torus Size–Luminosity Relationship in AGN*, DOI: 10.3847/1538-4357/ad414d

[4] Cho, H., Woo, J.-H., **Wang, S.**, et al. 2023, **ApJ**, 953, 142, *The Seoul National University AGN Monitoring Project IV: Hα reverberation mapping of 6 AGNs and the Hα Size–Luminosity Relation*, DOI: 10.3847/1538-4357/ace1e5

[5] 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

[6] Wu, J., et al. 2022, **MNRAS**, 517, 2659, *Demographics of z∼6 quasars in the black hole mass–luminosity plane*, DOI: 10.1093/mnras/stac2833

[7] 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

[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

[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

[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

[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

[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

[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

[14] Yang, J., et al. 2017, **AJ**, 153, 184, *Discovery of 16 New z∼5.5 Quasars: Filling in the Redshift Gap of Quasar Color Selection*, DOI: 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

[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≈5*, DOI: 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

[18] Zou, H., et al., 2015, **PASP**, 127, 94, *Capability of Quasar Selection by Combining SCUSS and SDSS Observations*, DOI: 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*