Yongjung Kim | CV

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Positions

Senior Researcher — **Daejeon, Korea**
Korea Astronomy and Space Science Institute (KASI) — *2023.07 – present*
Space Astronomy Group (PI: Dr. Woong-Seob Jeong)

Sejong Science Fellow — **Daegu, Korea**
Kyungpook National University, continued at KASI — *2021.09 – present*
Advisor: Prof. Minjin Kim

KIAA Fellow — **Beijing, China**
Kavli Institute for Astronomy and Astrophysics at Peking University — *2019.11 – 2021.09*
Advisor: Prof. Linhua Jiang

Postdoctoral Fellow — **Seoul, Korea**
Research Institute for Basic Sciences at Seoul National University — *2019.09 – 2019.10*
Advisor: Prof. Myungshin Im

Education

Seoul National University — **Seoul, Korea**
Ph.D. in Astronomy — *2013.03 – 2019.08*
Thesis title: Survey of Faint Quasars at High Redshifts
Supervisor: Prof. Myungshin Im

Seoul National University — **Seoul, Korea**
B.S. in Astronomy — *2009.03 – 2013.02*
Minor: Physics

Research Interests

Observational Cosmology with Quasars

- High-redshift Quasar Survey with Infrared Medium-deep Survey (IMS)
- Contribution of faint quasars to the cosmic reionization and ionizing backgrounds
- Growth of the supermassive black holes with their host galaxies at various redshifts
- Demography of quasars along the cosmic time
- Multi-wavelength surveys (participating in IMS, DESI, CSST & SPHEREx)

Research Grants

The Sejong Science Fellowship
Funded by National Research Foundation of Korea ($420,000) — *2021-2026*
Subject: Cosmic Evolution of Quasar-Galaxy by developing an Integrated Analysis Model for the Observational Big Data

The 2020 China Postdoc Science Special Grant
Funded by China Postdoctoral Science Foundation ($26,000) — *2020*
Subject: Quasar and Host Galaxy Properties with the Newest Large Survey Data

The 2020 China Postdoc Science General Grant
Funded by China Postdoctoral Science Foundation ($12,000) — *2020*
Subject: Quasar and Host Galaxy Properties with the Newest Large Survey Data

Top 100 Fellowship
Postdoc International Exchange Program at PKU (*$7,000*) *2019*
Subject: Enhanced Studies on High-redshift Quasars

Honors and Awards

Scholarship for Creative Academic Performance
Brain Korea 21 Program for Leading Universities and Students as a BK fellow (*$ 58,000*) *2013 – 2019*
awarded by National Research Foundation of Korea

Academic Excellence Scholarship
Partial tuition scholarship (*$2,000*) *2014, 2015*
awarded by Seoul National University

SNU in Global Research Awards
2nd place *2013*
awarded by Office of International Affairs at Seoul National University

Best Poster Presentation Awards at the 2012 Fall KAS Meeting
1st place *2012*
awarded by Korean Astronomical Society

Lotte Scholarship
Full tuition scholarship (*$5,000*) *2012*
awarded by Lotte Foundation

Presidential Science Scholarship
Full tuition scholarship (*$10,000*) *2009 – 2010*
awarded by National Research Foundation of Korea

Observational Experience

Classical/Remote Observations

BOAO 1.8 m Telescope **Bohyunsan Optical Astronomy Observatory**
Longslit Spectrograph
2023 January 27-31 (5 nights)

Palomar 200 inch Telescope **Palomar Observatory**
DBSP (*Remote*) (*Telescope Access Program*)
2 nights in 2020B, 2 nights in 2021A

Magellan Baade 6.5 m Telescope **Las Campanas Observatory**
IMACS & FIRE
2015 January 18-19, September 11-13; 2016 December 3-5; 2018 September 9-10 (10 nights)

Otto Struve 2.1 m Telescope **McDonald Observatory**
SQUEAN & CQUEAN
2014 June 3-8, November 3-9; 2015 June 19-28; 2016 July 25-28; 2017 February 1-11, April 19-26, September 16-24, December 26-31; 2018 April 16-25; 2019 February 5-14 (81 nights)

Maidanak 1.5 m Telescope **Maidanak Observatory**
SNUCAM
2013 August 2-7 (6 nights)

Observations awarded as PI

James Clerk Maxwell Telescope **East Asian Observatory**
SCUBA-2
9.00 hr in 2018A

Gemini 8 m Telescopes **Gemini Observatory**
GMOS-N, GMOS-S, & FLAMINGOS-2 (*K-GMT Science Program*)
9.00 hr in 2016B; 13.00 hr in 2017B; 7.92 hr in 2018A; 14.00 hr in 2018B; 10.14 hr in 2019A; 6.9 hr in 2020A

Atacama Large Millimeter/submillimeter Array
12m Arrays
3.6 hr in Cycle 4; 2.6 hr in Cycle 5

Observations awarded as Co-PI

Gemini 8 m Telescope **Gemini Observatory**
GMOS-S (*K-GMT Science Program*)
1 night in 2015A; 6.70 hr in 2016A; 24.00 hr in 2017A (for thesis; PI: Myungshin Im)

Outreach and Other Experiences

TAC of K-GMT Program
Gemini-2023B *2023-*

KIAA-DoA Seminar Committee
Organizing seminar talks at KIAA & DoA at PKU *2021*

PKU Lunch Talk Committee
Organizing lunch talks at PKU *2020*

Technical Research Personnel
Serving duty on Korean military service *2016 – 2019*

Lecturer for International Astronomy Olympiad (IAO) students in Korea
Subject: Basic and Application of Observational Astronomy *2017*

Teaching assistant & lecturer for undergraduate class
Astronomical Observation and Lab (1 semester); Astronomy Lab (1 year) *2013 – 2014*

Undergraduate internship
Center for the Exploration of the Origin of the Universe (CEOU) at SNU *2012 – 2013*
Subject: The Red Objects in the GRB 100205A Field
Supervisor: Prof. Myungshin Im

Computer Skills

Programming: IDL (fluent), Python (fluent), R (basic)

Data Analysis: IRAF, SExtractor, SWarp, SCAMP, CASA, Galfit, TOPCAT, etc.

Others: LaTeX, Microsoft Office, Adobe Photoshop, etc.

Academic References

Professor Myungshin Im
- mim@astro.snu.ac.kr, +82-2-880-6585
- Department of Physics and Astronomy, Seoul National University, Korea

Professor Linhua Jiang
- jiangKIAA@pku.edu.cn, +86-10-62755783
- Kavli Institute for Astronomy and Astrophysics, Peking University, China

Professor Minjin Kim
- mkim@knu.ac.kr, +82-53-950-7136
- Department of Astronomy and Atmospheric Sciences, Kyungpook National University, Korea

Publications

Refereed Publications

- 21 in total (8 as first author, and 13 as co-author) Link to ADS Library

21. **Kim, Y.**, Im, M., et al. 2022, AJ, 164, 114: *The Infrared Medium-deep Survey. IX. Discovery of Two New $z \sim 6$ Quasars and Space Density down to $M_{1450} \sim -23.5$ mag*
20. **Kim, Y.** & Im, M., 2021, ApJL, 910, 11: *Pure Density Evolution of the Ultraviolet Quasar Luminosity*

Functions at $2 \lesssim z \lesssim 6$

19. **Kim, Y.**, Im, M., et al. 2020, ApJ, 904,111: *The Infrared Medium-deep Survey. VIII. Quasar Luminosity Function at* $z \sim 5$
18. **Kim, Y.**, & Im, M. 2019, ApJ, 879, 117: *High Star Formation Rates of Low Eddington Ratio Quasars at* $z \gtrsim 6$
17. **Kim, Y.**, Im, M., et al. 2019, ApJ, 870, 86: *The Infrared Medium-deep Survey. VI. Discovery of Faint Quasars at* $z \sim 5$ *with a Medium-band-based Approach*
16. **Kim, Y.**, Im, M., et al. 2018, ApJ, 855, 138: *The Infrared Medium-deep Survey. IV. The Low Eddington Ratio of A Faint Quasar at* $z \sim 6$*: Not Every Supermassive Black Hole is Growing Fast in the Early Universe*
15. **Kim, Y.**, Im, M., et al. 2015, ApJL, 813, 35: *Discovery of a Faint Quasar at* $z \sim 6$ *and Implications for Cosmic Reionization*
14. **Kim, Y.**, Im, M., et al. 2015, PKAS, 30, 463: *Newly Discovered Footprints of Galaxy Interaction around Seyfert 2 Galaxy NGC 7743*
13. Byun, W., Kim, M., ..., **Kim, Y.** et al. 2023, ApJS, submitted: *Photometric Selection of Unobscured QSOs in the Ecliptic Poles: KMTNet in the South Field and Pan-STARRS in the North Field*
12. Kim, D., Im, M., ..., **Kim, Y.** et al. 2023, ApJ, accepted: *Estimators of bolometric luminosity and black hole mass with mid-infrared continuum luminosities for dust obscured quasars: Prevalence of dust obscured SDSS quasars*
11. Lee, B., Wang, J., ..., **Kim, Y.** et al. 2022, ApJS, 262, 31: *ALMA/ACA CO Survey of the IC 1459 and NGC 4636 Groups: Environmental Effects on the Molecular Gas of Group Galaxies*
10. Shin, S., Im, M., & **Kim, Y.** 2022, ApJ, 937, 32: *The quasar luminosity function at* $z \sim 5$ *via deep learning and Bayesian information criterion*
9. Taak, Y-. C., Im, M., **Kim, Y.**, et al. 2022, A&A, 665, 5: *High-*z *Universe probed via Lensing by QSOs (HULQ) II. Deep GMOS Spectroscopy of a QSO Lens Candidate*
8. Shin, S., Im, M., **Kim, Y.** & Jiang, L. 2022, JKAS, 55, 131: *Newly Discovered* $z \sim 5$ *Quasars via Deep Learning and Bayesian Information Criterion*
7. Shin, S., Im, M., **Kim, Y.**, et al. 2020, ApJ, 893, 45: *The Infrared Medium-deep Survey. VII. Faint Quasars at* $z \sim 5$ *in the ELAIS-N1 Field*
6. Lee, S.-K., Im, M., ..., and **Kim, Y.** 2019, MNRAS, 490, 135: *More connected, more active: galaxy clusters and groups at* $z \sim 1$ *and the connection between their quiescent galaxy fractions and large-scale environments*
5. Im, M., Choi, C., ..., **Kim, Y.**, et al. 2019, JKAS, 52, 11: *Intensive Monitoring Survey of Nearby Galaxies (IMSNG)*
4. Jeon, Y., Im, M., Kim, D., **Kim, Y.** et al. 2017, ApJS, 231, 16: *The Infrared Medium-deep Survey. III. Survey of Luminous Quasars at* $4.7 \leq z \leq 5.4$
3. Kim, J.-W., Im, M., ..., **Kim, Y.** et al. 2016, ApJ, 821, 10: *Discovery of a Supercluster at* $z \sim 0.91$ *and Testing the* Λ*CDM Cosmological Model*
2. Jeon, Y., Im, M., ..., **Kim, Y.** et al. 2016, JKAS, 49, 25: *The Infrared Medium-Deep Survey. V. A New Selection Strategy for Quasars at* $z > 5$ *Based on Medium-Band Observations with SQUEAN*
1. Karouzos, M., Im, M., ..., **Kim, Y.** et al. 2014, ApJ, 797, 26: *The Infrared Medium-Deep Survey. II. How to Trigger Radio AGNs? Hints from their Environments*

Conferences

Invited Talks

- *"Hunting for Faint High-redshift Quasars with Infrared Medium-deep Survey"*, K-GMT Science Program Users Meeting 2020, On-line, 2020, November 19-20.
- *"Discoveries and Properties of High-redshift Quasars with IMS"*, Science and Evolution of Gemini Observatory 2018, San Francisco (USA), 2018, July 22-26.

Selected Talks

- *"Searching for High-z Faint Quasars with IMS"*, Gemini Observatory Science Meeting 2022, Seoul (Korea), 2022, July 26-29.
- *"Quasar Luminosity Function at* $z \sim 5$ *with IMS"*, Summer All Zoom Epoch of Reionization Astronomy Conference (SAZERAC), On-line, 2020, July 6-9.
- *"High Star Formation Rates of Low Eddington Ratio Quasars at* $z \gtrsim 6$*"*, Cosmic Evolution of Quasars:

from the First Light to Local Relics, Beijing (China), 2019, October 21-25.

- *"IMS J2204+0112, a Low Eddington Ratio in the Epoch of Reionization"*, Extremely Big Eyes on the Early Universe at Kavli IPMU, Tokyo (Japan), 2019, March 25-29.
- *"The Low Eddington Ratio of IMS J2204+0112, a Faint Quasar at $z \sim 6$"*, Extremely Big Eyes on the Early Universe at UCLA, Los Angeles (USA), 2019, January 28 - February 1.
- *"Discovery and Properties of IMS J2204+0112, a Faint Quasar with Low Eddington Ratio at z∼6"*, K-GMT Science Program Users Meeting 2018, Daejeon (Korea), 2018, February 26-27.
- *"High-z Quasar Survey with IMS: Are Quasars Growing Fast in the Early Universe?"*, East-Asia AGN Workshop 2017, Kagoshima (Japan), December 4-6.