Yuzo Ishikawa

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EDUCATION

Ph.D. Astronomy and Astrophysics, Johns Hopkins University | 2024

M.Sc. Physics (Astronomy), San Francisco State University | 2019

B.A. Astrophysics and Physics, University of California, Berkeley | 2014

RESEARCH EXPERIENCE

2019 - present: Graduate Research Assistant | Johns Hopkins University
Thesis advisor: Dr. Nadia L. Zakamska
Thesis: "Exploring the gas cycles that drive galaxy formation: connecting the central black hole with the galactic environment"

- Multiwavelength analyses of quasar feedback research
- Q3D Collaboration: JWST Early Release Science (ERS-1135) of powerful quasars using NIRSpec and MIRI integral field spectroscopy (IFS); development of `q3dfit`; co-I of Cycle 2 programs
- Spectroscopy of obscured quasars with Gemini/GNIRS and X-ray XMM-Newton and NuSTAR
- VODKA Collaboration: PI of a JWST Cycle 1 program (GO-2654) to study dual quasars and their host galaxies at cosmic noon with NIRSpec and MIRI IFS; co-I of Cycle 2 programs

2020 - 2021: Research rotation | JHU & Space Telescope Science Institute
Rotation advisors: Dr. Massimo Stiavelli and Dr. Takahiro Morishita

- High redshift galaxy and quasar research using Hubble data to probe the Epoch of Reionization
- Imaging and grism spectroscopy analysis with `Python`; Spectral energy distribution (SED) fits with `bagpipes`; calculating the galaxy luminosity function

2017 - 2019: Graduate Research Assistant | San Francisco State University
Thesis advisor: Dr. Andisheh Mahdavi
Thesis: "Broadband photometric analysis of the stellar populations in brightest cluster galaxies of X-ray luminous galaxy clusters"

- Stellar population analysis of Hubble archival imaging data of galaxy clusters

2015 - 2019: Staff Research Associate II | UC Berkeley, Space Sciences Laboratory
Advisors: Dr. Steven R. Gibson and Dr. Jerry Edelstein

- Astronomical instrumentation research: designing, measuring, assembling, and testing spectrograph systems for ground-based and space-based observatories.
Projects: Keck Planet Finder (KPF), Dark Energy Spectroscopic Instrument (DESI), Ionospheric Connection Explorer (ICON) Extreme Ultraviolet Spectrograph (EUV)

2013 - 2014: Undergraduate Research Assistant | *UC Berkeley, Space Sciences Laboratory*
Advisor: Dr. Jerry Edelstein

Astronomical instrumentation research.
Projects: DESI, TripleSpec Externally Dispersed Interferometry (TEDI)

PUBLICATIONS (refereed)

1. ***Y. Ishikawa**, et al. "Symbiotic growth of SMBHs? First observations of a $z \sim 2$, sub-arcsec separation dual quasar with JWST NIRSpec IFU." (In prep. 2023)
2. A. Vayner, N. L. Zakamska, **Y. Ishikawa**, et al. "First results from the JWST Early Release Science Program Q3D: Powerful quasar-driven galactic scale outflow at $z = 3$." *Astrophysical Journal* (submitted, 2023)
3. A. Vayner, N. L. Zakamska, **Y. Ishikawa**, et al. "First results from the JWST Early Release Science Program Q3D: Ionization cone, clumpy star formation and shocks in a $z = 3$ extremely red quasar host." *Astrophysical Journal* (Sept. 2023)
4. D. Rupke, et al. [including **Y. Ishikawa**], "First Results from the JWST Early Release Science Program Q3D: Benchmark Comparison of Optical and Mid-infrared Tracers of a Dusty, Ionized Red Quasar Wind at $z = 0.435$." *Astrophysical Journal* (Aug. 2023)
5. S. Veilleux, et al. [including **Y. Ishikawa**], "First Results from the JWST Early Release Science Program Q3D: The Warm Ionized Gas Outflow in $z \sim 1.6$ Quasar XID 2028 and Its Impact on the Host Galaxy." *Astrophysical Journal* (Aug. 2023)
6. **Y. Ishikawa**, B. Wang, N. L. Zakamska, et al. "Infrared spectroscopic confirmation of $z \sim 2$ photometrically selected obscured quasars." *MNRAS* (June 2023)
7. A. Vayner, et al. [including **Y. Ishikawa**], "Cold mode gas accretion on two galaxy groups at $z \sim 2$." *MNRAS* (Feb. 2023)
8. D. Wylezalek, et al. [including **Y. Ishikawa**], "First Results from the JWST Early Release Science Program Q3D: Turbulent Times in the Life of a $z \sim 3$ Extremely Red Quasar Revealed by NIRSpec IFU." *Astrophysical Journal* (Nov. 2022)
9. **Y. Ishikawa**, T. Morishita, M. Stiavelli, et al. "Unresolved $z \sim 8$ Point Sources and Their Impact on the Bright End of the Galaxy Luminosity Function." *Astrophysical Journal* (Sept. 2022)
10. **Y. Ishikawa**, A. Goulding, N. L. Zakamska, et al. "X-ray analysis of SDSS J165202.60+ 172852.4, an obscured quasar with outflows at peak galaxy formation epoch." *MNRAS* (April 2021)
11. T. Morishita, et al. [including **Y. Ishikawa**], "SuperBoRG: Exploration of Point Sources at $z \sim 8$ in HST Parallel Fields." *Astrophysical Journal* (Nov. 2020)
12. **Y. Ishikawa**, M. M. Sirk, J. Edelstein, P. Jelinsky, D. Brooks, G. Tarle. "Comprehensive measurements of the volume-phase holographic gratings for the Dark Energy Spectroscopic Instrument." *Astrophysical Journal* (Oct. 2018)
13. M. M. Sirk, E. Korpela, **Y. Ishikawa**, et al. Design and Performance of the ICON EUV Spectrograph." *Space Sciences Review.* (July 2017)
14. D. J. Erskine, et al. [including **Y. Ishikawa**]. "High resolution broad-band spectroscopy using externally dispersed interferometry at the Hale telescope: Part 1, Data Analysis & Results." *Journal of Astronomical Telescopes, Instruments, and Systems.* (May 2016)

PUBLICATIONS (non-refereed)

1. S. Yue, et al. [including **Y. Ishikawa**], "Discovery and Characterization of Galactic-scale Dual Supermassive Black Holes Across Cosmic Time." *arXiv*: 2306.15527. (2023)
2. A. D. Baker, et al. [including **Y. Ishikawa**], "A UV double pass spectrograph for monitoring stellar activity for the Keck Planet Finder," *Proc SPIE* Vol. 12184, (Aug. 2022)
3. S. R. Gibson, et al. [including **Y. Ishikawa**], "Keck Planet Finder: design updates," *Proc SPIE* Vol. 11447, (Aug. 2020)
4. S. R. Gibson, et al. [including **Y. Ishikawa**], "Keck Planet Finder: preliminary design," *Proc SPIE* Vol. 10702. (Dec. 2018)
5. M. M. Sirk, et al. [including **Y. Ishikawa**]. "A optical fiber double scrambler and mechanical agitator system for the Keck planet finder spectrograph," *Proc SPIE* Vol. 10702 (July 2018)
6. DESI Collaboration, et al. [including **Y. Ishikawa**], "The DESI Experiment Part I: Science, Targeting, and Survey Design." *arXiv*: 1611.0036. (2016)
7. DESI Collaboration, et al. [including **Y. Ishikawa**], "The DESI Experiment Part II: Instrument Design." *arXiv*: 1611.0037. (2016)
8. **Y. Ishikawa**, et al. "Calibration techniques for NASA ICON Extreme Ultraviolet Spectrograph (EUV)." *Proc SPIE* Vol. 9972. (Sept. 2016)
9. C. L. Poppett, J. Edelstein, **Y. Ishikawa**, et al. "Optical fiber termination method for the Dark Energy Spectroscopic Instrument (DESI)." *Proc. SPIE* Vol. 9908. (Aug. 2016)
10. D. J. Erskine, et al. [including **Y. Ishikawa**]. "High resolution broad-band spectroscopy in the NIR using the Triplespec externally dispersed interferometer at the Hale telescope." *Proc. SPIE* Vol. 914717. (July 2014).

CONFERENCE TALKS & POSTERS

1. **243rd AAS Meeting** - (Dissertation Talk)
   New Orleans, LA, USA | Jan. 2024
   "Spatially-resolved spectroscopy of dual quasars at cosmic noon with JWST and ALMA"
2. **ELT SCIENCE IN LIGHT OF JWST** - (Talk)
   University of California, Los Angeles, CA, USA | Dec. 2023
   "Advancing dual quasars science at cosmic noon and beyond with ELTs: spatially resolved observations with JWST and ALMA"
3. **The First Year of JWST Science Conference** - (Talk)
   Space Telescope Science Institute, Baltimore, MD, USA | Sept. 2023
   "First look of sub-arc dual quasars at $z \sim 2$: spatially-resolved spectroscopy with JWST and ALMA"
4. **233rd AAS Meeting** - (Poster)
   Seattle, WA, USA | Jan. 2019
   "Measuring stellar masses of the brightest cluster galaxies in X-ray luminous galaxy clusters using Hubble Space Telescope archival data"
5. **SPIE Optical Engineering & Applications** - (Talk)
   San Diego, CA, USA | Aug. 2016
   "Calibration techniques for NASA ICON Extreme Ultraviolet Spectrograph (EUV)"

TELESCOPE PROPOSALS & RESEARCH GRANTS

James Webb Space Telescope, Co-I, Cycle 2
Approved for 5.3 hours - "Deep grism spectroscopy of the complex environment around an extremely red quasar within an ultramassive host at $z = 3$"

James Webb Space Telescope, Co-I, Cycle 2
Approved for 349.9 hours - "A census of high-redshift kpc-scale dual quasars"

Gemini North Observatory, Co-I, 2022B
Approved for 13 hours - "Extreme quasar feedback at the peak of the galaxy formation"

Atacama Large Millimeter/Submillimeter Array (ALMA), PI, Cycle 9
215.18 minutes observed - "First look of a close-separation, $z \sim 2$ dual quasar with ALMA"

James Webb Space Telescope, PI, Cycle 1
Approved for 16.9 hours - "Kpc-scale dual supermassive black holes and their impact on galaxy formation at cosmic noon"

AWARDS

2023 - AAS Rodger Doxsey Travel Prize | *American Astronomical Society*

2023 - Kupperman Travel Award | *Johns Hopkins University*

LEADERSHIP, TEACHING, & MENTORING

2023 - 2024: Spring Symposium LOC member | STScI

2023 summer: Mentoring a summer undergraduate intern | JHU

- I briefly mentored a summer undergraduate student project (Ronald Garcia) to determine the best lens model of a quadruply lensed quasar using analytical and computational approaches

2022 - present: Galaxy/AGN Journal Club organizer | JHU & STScI

- Co-organized weekly guest talks and paper discussions

2022 - present: Space@Hopkins Space Fellow | JHU with Dr. Charles L. Bennett

- Co-organized the JHU & NASA Goddard Space Flight Center Interaction Day event
- Oversaw the Space@Hopkins Seed Grant proposal selection
- Composed inter-departmental newsletters and managed the Space@Hopkins webpage

2022: JHU CARE (Center for Astrophysics Research Experience) Seminar Series Organizer

- Organized the talks with guest speakers for summer undergraduate research interns at JHU

2020 - 2022: Physics & Astronomy Graduate Student (PAGS) | JHU

- As Vice President: organized the prospective graduate student open house visits
- As STScI liaison: organized weekly meetings between students and the colloquium speaker

2019 - present: Kendo (Japanese fencing) Instructor | JHU Kendo Club

2019 - 2020: Graduate Teaching Assistant | JHU

- AS.171.310: Introduction to Space, Science, and Technology

- AS.171.205: Introduction to Practical Data Science: Beautiful Data

2016 - 2018: Graduate Teaching Assistant | San Francisco State University

- ASTR 116: Astronomy Laboratory
- ASTR 400/700: Stellar Astrophysics
- PHYS 230: General Physics with Calculus II (Introduction to electricity and magnetism)
- PHYS 232: General Physics with Calculus Laboratory II (Electricity, magnetism, and circuits)
- PHYS 242: General Physics with Calculus Laboratory III (Thermodynamics and optic)

MEDIA COVERAGE & ARTICLES WRITTEN

JHU Hub, "Webb reveals unprecedented glimpse of merging galaxies," Oct. 20, 2022

NASA, "NASA's Webb Uncovers Dense Cosmic Knot in The Early Universe," Oct. 20, 2022

Astronomical Society of Japan, *The Astronomical Herald/*天文月報, "JWST で二重クエーサーの謎に迫る," March 2022. (authored)
https://www.asj.or.jp/jp/activities/geppou/item/115-3_173.pdf