Yuming Fu

Curriculum vitae

Leiden Observatory
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Employment

01-06-2023 – **Postdoctoral Researcher**, *Leiden Observatory, Leiden University*, The Netherlands
- Research areas: Quasar and galaxy evolution, observational cosmology, data mining and machine learning in astronomy, astronomical data processing
- Advisors: Dr. R.J. Bouwens (Leiden), and Prof. Dr. Karina Caputi (Groningen)

Sep. 2021 – May. 2023 **CSST Postdoctoral Research Fellow**, *Kavli Institute for Astronomy and Astrophysics, Peking University*, Beijing, China
- Advisor: Prof. Xue-Bing Wu

Academic service

01-06-2023 – **Active member**, *Galaxy/AGN Evolution Science Working Group; NIR Processing Function*, Euclid Consortium
- References: Prof. Lingyu Wang (Groningen), and Dr. Gianluca Polenta (ASI)

01-12-2025 – **Member**, *ESA Euclid Data Space User Group*, `https://euclid.dataspace.esa.int/eds-user-group`
- Reference: Dr. Valeria Pettorino (ESA)

2021– **Peer reviewer**, *A&A, ApJS, ATI, Nat Astron, RAA*

Education

Sep. 2016 – Jul. 2021 **Ph.D. in Astrophysics**, *Department of Astronomy, Peking University*, Beijing
- Supervisor: Prof. Xue-Bing Wu
- Thesis: A Survey for Quasars behind the Galactic Plane
- Outstanding Graduate of Beijing Higher Education Institutions (2021)

Apr. 2019 – Aug. 2019 **Visiting Ph.D. student**, *Leiden Observatory*, Leiden
- Supervisor: Prof. Dr. Anthony G. A. Brown

Sep. 2012 – Jul. 2016 **Bachelor of Science (Geophysics)**, *School of Geophysics and Information Technology, China University of Geosciences*, Beijing
- Supervisor: Prof. Guoming Jiang
- Thesis: High-precision Research on the Velocity Structure of Double Seismic Zone beneath Tohoku Region in Japan
- Outstanding Graduate of Beijing Higher Education Institutions (2016)

Teaching & supervision

2024– **Co-supervisor**, *PhD student T. Pan*, with Prof. Rottgering and Dr. van Weeren, Leiden Observatory

Jul. 2022 **Lecturer**, *Lesson: Decomposition of the one-dimensional spectra of quasars and galaxies*, CSST Summer School on Galaxy Sciences, Peking University

Sep. 2018 – Jul. 2022 **Class advisor**, *The Undergraduate Class of 2018*, Department of Astronomy, School of Physics, Peking University

Sep. 2019 – Jun. 2023 **Co-supervisor of seven students**, *Astronomical BSc Thesis Projects*, Peking University

Sep. 2019 – Jan. 2020 **Teaching assistant**, *Course: Observational Experiments for Astrophysics (Optical)*, Peking University

High-Performance Computing & Infrastructure

2017 – 2023 **Computational infrastructure engineering**, *Design, configuration, and maintenance of a system with dual Intel Xeon E5-2699 v4 CPUs (44 cores, 256 GB RAM, 150 TB storage), delivered an estimated theoretical peak performance of* ***1.55 TFLOPS***, Peking University

2022 – 2025 **Research computing user**, *Experienced in using Peking University's supercomputing clusters, 'Weiming-1' (542 TFLOPS) and 'Weiming-2' (2.71 PFLOPS), for large-scale astronomical machine learning tasks*, Peking University

Grants

2023 **Candidate Selections for the CSST Quasar Survey with Multi-band Photometry and Slitless Spectroscopy**, *General Program of China Postdoctoral Science Foundation, No. 2022M720266*, 80,000 CNY, PI

2022 – 2026 **A Survey of Quasars behind the Galactic Plane**, *NSFC Key Grant, No. 12133001*, 3.10 million CNY, Co-I

First-author papers

[5] **Euclid Collaboration: Y. Fu**, R. Bouwens, K. I. Caputi, D. Vergani, M. Scialpi, et al. "Euclid Quick Data Release (Q1): Euclid spectroscopy of QSOs. 1. Identification and redshift determination of 3500 bright QSOs". 2025, *A&A, in press (Euclid Q1 SI)*, arXiv:2512.08803. DOI: 10.48550/arXiv.2512.08803.

[4] **Yuming Fu**, Xue-Bing Wu, R. J. Bouwens, Karina I. Caputi, Yuxuan Pang, et al. "The CatSouth Quasar Candidate Catalog for the Southern Sky and a Unified All-Sky Catalog Based on Gaia DR3". 2025, *ApJS*, 279, 2, 54. DOI: 10.3847/1538-4365/ade999.

[3] **Yuming Fu**, Xue-Bing Wu, Yifan Li, Yuxuan Pang, Ravi Joshi, et al. "CatNorth: An Improved Gaia DR3 Quasar Candidate Catalog with Pan-STARRS1 and CatWISE". 2024, *ApJS*, 271, 2, 54. DOI: 10.3847/1538-4365/ad2ae6.

[2] **Yuming Fu**, Xue-Bing Wu, Linhua Jiang, Yanxia Zhang, Zhi-Ying Huo, et al. "Finding Quasars behind the Galactic Plane. II. Spectroscopic Identifications of 204 Quasars at $|b| < 20°$". 2022, *ApJS*, 261, 2, 32. DOI: 10.3847/1538-4365/ac7f3e.

[1] **Yuming Fu**, Xue-Bing Wu, Qian Yang, Anthony G. A. Brown, Xiaotong Feng, et al. "Finding Quasars behind the Galactic Plane. I. Candidate Selections with Transfer Learning". 2021, *ApJS*, 254, 1, 6. DOI: 10.3847/1538-4365/abe85e.

Second/third-author papers

[7] Yunyi Choi, **Yuming Fu**, Myungshin Im, Xue-Bing Wu, Christopher A. Onken, et al. "AllBRICQS: The Discovery of Luminous Quasars in the Northern Hemisphere". 2025, *ApJS*, 280, 2, 73. DOI: 10.3847/1538-4365/adf8ed.

[6] Zi-qi He, **Yu-ming Fu**, Xue-bing Wu, and Ling-xue He. "Identifying FeLoBAL Quasars in SDSS DR7Q with the Convolutional Neural Network". 2025, *ChA&A*, 49, 4, 756–772. DOI: 10.1016/j.chinastron.2025.11.005.

[5] Zhi-Ying Huo, **Yuming Fu**, Yang Huang, Haibo Yuan, Xue-Bing Wu, et al. "Finding Quasars behind the Galactic Plane. III. Spectroscopic Identifications of ∼1300 New Quasars at $|b| \leq 20°$ from LAMOST DR10". 2025, *ApJS*, 278, 1, 6. DOI: 10.3847/1538-4365/adba52.

[4] T. Pan, **Y. Fu**, H. J. A. Rottgering, R. J. van Weeren, A. B. Drake, et al. "The environments of radio galaxies and quasars in LoTSS data release 2". 2025, *A&A*, 695, A69. DOI: 10.1051/0004-6361/202453154.

[3] Yuxuan Pang, Xue-Bing Wu, **Yuming Fu**, et al. "A Pilot Study for the CSST Slitless Spectroscopic Quasar Survey Based on Mock Data". 2025, *ApJ*, 980, 223. DOI: 10.3847/1538-4357/adabdc.

[2] Yuxuan Pang, Xue-Bing Wu, **Yuming Fu**, Rui Zhu, Tao Ji, et al. "Quasar identifications from the slitless spectra: a test from 3D-HST". 2025, *MNRAS*, 540, 3, 2216–2237. DOI: 10.1093/mnras/staf849.

[1] Jun-Jie Jin, Xue-Bing Wu, **Yuming Fu**, et al. "The Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST) Quasar Survey: Quasar Properties from Data Releases 6 to 9". 2023, *ApJS*, 265, 1, 25. DOI: 10.3847/1538-4365/acaf89.

Contributed Euclid papers (selected)

[7] Euclid Collaboration, T. Matamoro Zatarain, S. Fotopoulou, F. Ricci, et al. "Euclid Quick Data Release (Q1). The active galaxies of Euclid". 2025, *A&A, in press (Euclid Q1 SI)*, arXiv:2503.15320. DOI: 10.1051/0004-6361/202554619.

[6] Euclid Collaboration, Y. Mellier, Abdurro'uf, J.A. Acevedo Barroso, et al. "Euclid - I. Overview of the Euclid mission". 2025, *A&A*, 697, A1. DOI: 10.1051/0004-6361/202450810.

[5] Euclid Collaboration, R. Navarro-Carrera, and et al. "Euclid Quick Data Release (Q1): Identification of massive galaxy candidates at the end of the Epoch of Reionisation". 2025, *A&A, submitted*, arXiv:2511.11943. DOI: 10.48550/arXiv.2511.11943.

[4] Euclid Collaboration, G. Polenta, M. Frailis, A. Alavi, et al. "Euclid Quick Data Release (Q1). NIR processing and data products". 2025, *A&A, in press (Euclid Q1 SI)*, arXiv:2503.15304. DOI: 10.1051/0004-6361/202554657.

[3] Euclid Collaboration, M. Siudek, M. Huertas-Company, M. Smith, et al. "Euclid Quick Data Release (Q1) Exploring galaxy properties with a multi-modal foundation model". 2025, *A&A, in press (Euclid Q1 SI)*, arXiv:2503.15312. DOI: 10.1051/0004-6361/202554611.

[2] Euclid Collaboration, F. Tarsitano, S. Fotopoulou, M. Banerji, et al. "Euclid Quick Data Release (Q1) First study of red quasars selection". 2025, *A&A, in press (Euclid Q1 SI)*, arXiv:2503.15319. DOI: 10.1051/0004-6361/202554591.

[1] L. Ulivi and et al. "Euclid: A machine-learning search for dual and lensed AGN at subarcsec separations". 2025, *A&A, submitted*, arXiv:2508.19494. DOI: 10.48550/arXiv.2508.19494.

Other co-authored papers

[14] Huimei Wang, Xue-Bing Wu, Nanyu Yao, Bing Lyu, Yuxuan Pang, et al. "Systematic Analysis of Changing-Look Active Galactic Nucleus Variability Using ZTF Light Curves". 2026, *ApJ*, 997, 1, 100. DOI: 10.3847/1538-4357/ae1fdc.

[13] Rui Zhu, Xue-Bing Wu, Yuxuan Pang, and **Yuming Fu**. "QHSC: The Quasar Candidate Catalog for the Hyper Suprime-Cam Subaru Strategic Program". 2026, *ApJS*, 282, 2, 38. DOI: 10.3847/1538-4365/ae2099.

[12] Bing Lyu et al. "The changing-look AGN SDSS J101152.98+544206.4 is returning to a type I state". 2025, *A&A*, 693, A173. DOI: 10.1051/0004-6361/202451699.

[11] Heng Wang, Yanli Ai, Yanxia Zhang, **Yuming Fu**, Wenfeng Wen, et al. "Highly Variable Quasar Candidates Selected from 4XMM-DR13 with Machine Learning". 2025, *ApJ*, 985, 1, 23. DOI: 10.3847/1538-4357/adc7b8.

[10] Di Wu, Zizhao He, Nan Li, Shenzhe Cui, **Yuming Fu**, et al. "Lensed quasars in CatNorth I. Wide-separation candidates". 2025, *arXiv e-prints*, arXiv:2509.17071. DOI: 10.48550/arXiv.2509.17071.

[9] Xu Zhang, Yanli Ai, Yanxia Zhang, **Yuming Fu**, Xue-Bing Wu, et al. "Finding Quasars behind the Galactic Plane. IV. Candidate Selection from Chandra with Random Forest". 2025, *arXiv e-prints*, arXiv:2512.23060. DOI: 10.48550/arXiv.2512.23060.

[8] Chengqi Liu et al. "Forecasting supernova observations with the CSST: I. Photometric samples". 2024, *Science China Physics, Mechanics, and Astronomy*, 67, 11, 119512. DOI: 10.1007/s11433-024-2456-x.

[7] Siqi Liu, A. -Li Luo, Zhenya Zheng, Wei Zhang, **Yu-Ming Fu**, et al. "The origin of the X-ray luminosity of the green pea galaxies: X-ray binaries or active galactic nuclei?" 2024, *A&A*, 689, A170. DOI: 10.1051/0004-6361/202449406.

[6] Qinchun Ma, Yuhan Wen, Xue-Bing Wu, Huapeng Gu, and **Yuming Fu**. "Hα Time Delays of Active Galactic Nuclei from the Zwicky Transient Facility Broadband Photometry". 2024, *ApJ*, 966, 1, 5. DOI: 10.3847/1538-4357/ad34d6.

[5] Qinchun Ma, Xue-Bing Wu, Huapeng Gu, Yuhan Wen, and **Yuming Fu**. "The Hα Broadband Photometric Reverberation Mapping of Four Seyfert 1 Galaxies". 2023, *ApJ*, 949, 1, 22. DOI: 10.3847/1538-4357/acc4c1.

[4] Jiang-Tao Li, Feige Wang, Jinyi Yang, Yuchen Zhang, **Yuming Fu**, et al. "Chandra Detection of Three X-Ray Bright Quasars at z $>$ 5". 2021, *ApJ*, 906, 2, 135. DOI: 10.3847/1538-4357/abc750.

[3] Su Yao et al. "The Large Sky Area Multi-object Fiber Spectroscopic Telescope (LAMOST) Quasar Survey: The Fourth and Fifth Data Releases". 2019, *ApJS*, 240, 1, 6. DOI: 10.3847/1538-4365/aaef88.

[2] Qian Yang et al. "Discovery of 21 New Changing-look AGNs in the Northern Sky". 2018, *ApJ*, 862, 2, 109. DOI: 10.3847/1538-4357/aaca3a.

[1] Qian Yang et al. "Quasar Photometric Redshifts and Candidate Selection: A New Algorithm Based on Optical and Mid-infrared Photometric Data". 2017, *AJ*, 154, 6, 269. DOI: 10.3847/1538-3881/aa943c.

Softwares

[3] **Yuming Fu**. *specbox: a simple tool to manipulate and visualize UV/optical/NIR spectra for astronomical research*. Version v1.0.0. Feb. 2026. DOI: 10.5281/zenodo.18642758.

[2] **Yuming Fu**. *QSOFITMORE: a python package for fitting UV-optical spectra of quasars*. Version v1.2.2. June 2025. DOI: 10.5281/zenodo.15571037.

[1] **Yuming Fu**. *PyFOSC: a pipeline toolbox for BFOSC/YFOSC long-slit spectroscopy data reduction*. Version v1.1.0. Apr. 2024. DOI: 10.5281/zenodo.10967240.

Conference Talks

Dec. 2025 **Identification of 3500 Bright QSOs with Euclid Q1 Spectroscopy (invited)**, *Working with Euclid Q1: From Data Access to Science*, Madrid, Spain

Mar. 2025 **4000 Bright Quasar Candidates from Gaia DR3 in Euclid Q1**, *ESLAB# 56 and 2025 Euclid Consortium Meeting*, Leiden, Netherlands

Jan. 2025 **Highly Complete Bright Quasar Sample from Gaia DR3 in Euclid Q1: Insights from the CatNorth+CatSouth Catalogues**, *EUCLID – From Q1 to DR1. Joint Workshop of Euclid Local Universe, Galaxy and AGN Evolution, and Primeval Universe Science Working Groups*, Tenerife, Spain

Jun. 2024 **Identifying the Rare FeLoBAL Quasars: Generative and Active Learning with Limited Data**, *2024 Euclid Consortium Meeting*, Rome, Italy

Feb. 2024 **Synergies Between Euclid and CSST in Galaxy and AGN Surveys: Indications from the First Euclid Data**, *2024 Euclid Galaxy and AGN Evolution Science Working Group Workshop*, Bologna, Italy

Dec. 2021 **Finding Iron Low-ionization Broad Absorption Line Quasars with SDSS**, *2020 Annual Meeting of Chinese Astronomical Society*, Nanchong, China

May. 2021 **A Survey for Quasars behind the Galactic Plane**, *The 23rd CAS Guoshoujing Symposium on Galaxies and Cosmology*, Hangzhou, China
The Best Oral Presentation

Apr. 2019 **Uncovering Hidden Quasars behind the Galactic Plane with AllWISE, Pan-STARRS and Gaia**, *ESLAB# 53: The Gaia Universe*, Noordwijk, Netherlands

Observations

2017 – 2022 **The 2.16-meter Telescope**, *Xinglong Observatory, National Astronomical Observatories, Chinese Academy of Sciences (NAOC)*, PI/Co-I, on-site/remote
Allocated time: $>$ 350 hours

2017 – 2022 **The 2.4-meter Telescope**, *Lijiang Observatory, Yunnan Observatories (YNAO), Chinese Academy of Sciences*, PI/Co-I, on-site/remote
Allocated time: $>$ 180 hours

2019 – 2021 **The McGraw-Hill 1.3-m Telescope**, *MDM Observatory*, PI/Co-I, remote
Allocated time: $>$ 100 hours

2018 – 2024 **The 200-inch Hale Telescope (P200)**, *Palomar Observatory*, PI/Co-I, remote
Allocated time: $>$ 90 hours

Training/Schools

Jul. 2018 **The 2nd East Asian Workshop on Astrostatistics**, *Purple Mountain Observatory*, Nanjing, China

Nov. 2017 **The Ninth Xinglong Observational Astrophysics Workshop: High Resolution Spectroscopy**, *Xinglong Observatory, NAOC*, Xinglong, China

Sep. 2017 **TIARA Summer School on Astrostatistics and Big Data**, *TIARA, ASIAA*, Tapei, China

Jul. 2017 **LAMOST Users Workshop 2017**, *NAOC/UCAS*, Beijing, China

Aug. 2016 **The Sixth Xinglong Observational Astrophysics Workshop: Time Domain Astronomy**, *Xinglong Observatory, NAOC*, Xinglong, China

Skills

Observation	**Photometric and spectroscopic observations. Data reduction with IRAF, Python, etc.**
Coding	**Python, MATLAB, Shell, Fortran, C**
Database	**ADQL, TOPCAT, MySQL, ClickHouse**
Big Data	**Data Mining, Statistical Machine Learning, Deep Learning, LLM**

Outreach

Jan. 2024	**Public Talk: The Beauty of the Space II: the Universe as seen by JWST and Euclid**, *Library of Jianyang City*, Chengdu
Mar. 2022	**Public Talk: Quasars in the Distant Universe**, *AstroSalon# 6 of the Peking University Youth Astronomy Society*, Beijing
Jan. 2022	**Public Talk: The Beauty of the Space**, *Library of Jianyang City*, Chengdu
Jan. 2020	**Public Talk: A Brief History of Black Holes**, *Library of Jianyang City*, Chengdu
Jan. 2019	**Public Talk: The Big Eyes: A Glimpse at the Telescopes**, *Library of Jianyang City*, Chengdu
Feb. 2018	**Public Talk: Astronomy in Everyday Life**, *Hangzhou Arts and Crafts Museum*, Hangzhou

Honors & Awards

2020	**Merit Student**, *Peking University*, Beijing
2018, 2020	**Dedicated Scholarship for Outstanding PhD Students**, *Peking University*, Beijing
2020	**Outstanding Teaching Assistant**, *Peking University*, Beijing
2017, 2019	**Award for Scientific Research**, *Peking University*, Beijing
2017	**The Third Prize of CASC Scholarship**, *Peking University*, Beijing