

HUIMIN QU

Sydney Institute for Astronomy, 423D A28, The University of Sydney

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Astrophysics PhD candidate experienced in Bayesian inference, gravitational lens modeling, and multi-wavelength data analysis.

EDUCATION

Ph.D. Candidate, The University of Sydney *Mar 2023 – Sep 2026 (expected submission)*

Advisor: Geraint F. Lewis

Reconstructing the dark matter properties of lensing galaxies in the strong gravitational lensing regime.

B.Sc. (Honours), Xiamen University *Sep 2018 - Jun 2022*

Major: Astronomy GPA: 3.91/4.00 Rank: 1%

Growths of Stellar-mass Black Holes in the Center of Gamma-ray Bursts and the Lower Mass Gap

SKILLS

Programming: Python, JAX, Shell, Git, C++, Fortran; experience with HPC and MPI

Quantitative Skills: Bayesian data analysis, joint modeling, optimization algorithms (PSO, SVI), sampling algorithms including HMC, machine learning algorithms

Software development: Extended Lenstronomy to enable robust multi-band modeling with astrometric offsets for large survey datasets.

PUBLICATIONS

1. **Qu H.-M.**, et al., Revealing the Mass Structure of a Galaxy-Galaxy Hyperbolic Umbilic Lens with Gravitational Lensing and Kinematics, in prep.
2. **Qu H.-M.**, et al., Ground- to Space-Based Lens Reconstructions: Comparing HST and PISCO Inferences for Eight AGEL Systems, in prep.
3. Salama N., Ballard D. J., **Qu H.-M.**, Lewis G. F., Microlensing² of the multiply imaged quasar in J1721+8842, the Double Source Plane Einstein Zig-Zag Gravitational Lens, to be submitted soon.
4. **Qu H.-M.**, Ballard D. J., Lewis G. F., Glazebrook K., Stark A., et al., Multi-band Reconstruction of Sixteen Gravitational Lens Systems using PISCO data, *MNRAS* submitted.
5. Barone T. M., Vasan G. C. K., Tran K.-V., et al. (including **Qu H.-M.**), The AGEL Survey Data Release 2: A Gravitational Lens Sample for Galaxy Evolution and Cosmology, *AJ* accepted.
6. **Qu H.-M.**, Liu T., Revisiting black hole hyperaccretion in the center of gamma-ray bursts for the lower mass gap, *ApJ* 929, 83 (2022).
7. Liu T., Qi Y.-Q. Cai Z.-Y., Sun M.-Y., **Qu H.-M.**, et al., Neutrino-dominated accretion flows: second nucleosynthesis factory in core-collapse supernovae and regulation of iron markets in galaxies, *ApJ* 920, 5 (2021).

CONFERENCE & SEMINAR TALKS

ASA ECR Symposium Talk *RSAA, ANU, Canberra, Australia, 2026 (Accepted)*

44th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (**MaxEnt 2025**) *Auckland, New Zealand, Dec 2025 (Accepted)*

Visitor Talk *Technical University of Munich, Garching, Germany Oct 2025*

1st Workshop Scaling Up Lensing *Liège, Belgium Oct 2025*

ASA Annual Science Meeting

Adelaide, Australia, Jul 2025

School of Physics HDR Symposium

USYD, Sydney, Australia Jun 2025

Dark Matter under the Gravitational Lens

Hong Kong, China Apr 2025

Mount Stromlo Student Seminar

Canberra, Australia Sep 2024

Undergraduate Astronomy Symposium of Peking University

Remote Sep 2020

SELECTED HONORS & AWARDS

International Research Training Program (RTP) Scholarship

Mar 2023 – Sep 2026 (expected)

Approximately 30 awards per year in this category at USYD

ASA Student Travel Grant, AUD2,500

2025

Outstanding Undergraduate Student Award, Xiamen University

2022

National Scholarship, PRC Ministry of Education, three times, total ¥24,000

2019–2021

Guangqi Fellowship, Shanghai Astronomical Observatory, CAS, total ¥14,000

2019–2022

Second Prize, 10th China Undergraduate Physicists Tournament (CUPT)

Aug 2019

(First Prize in East China Division, May 2019)

SUMMER SCHOOLS

ANITA Summer School

Mount Stromlo Observatory, 2025

Program: Computational Multiphysics Hydrodynamics

HPC and Data in Astrophysics

Remote, 2024

CSST Summer School of Galaxy Sciences

Remote, 2022

TEACHING

Tutor & Demonstrator (PHYS1001–1003)

USYD, Australia, 2024–2025

Tutor (PHYS4123 *General Relativity and Cosmology*)

Tutor (Modern Cosmology; High-Energy Astrophysics)

XMU, China, 2021–2022

REFERENCES

Prof. Geraint F. Lewis

The University of Sydney, Sydney, Australia

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Prof. Karl Glazebrook

Swinburne University of Technology, Melbourne, Australia

✉ kglazebrook@swin.edu.au

Dr. Daniel J. Ballard

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