

HUIMIN QU

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

✉ starryblack39@gmail.com ◇ 🌐 huiminqu.github.io

Astrophysics PhD candidate with expertise in Bayesian inference, gravitational lens modeling, and developing data-driven methodologies for complex astronomical datasets.

EDUCATION

Ph.D. Candidate, The University of Sydney 2023 – 2026

Advisor: Geraint F. Lewis

Bayesian Reconstruction of Mass Distributions in Strong Gravitational Lensing Systems.

B.Sc. (Honours), Xiamen University 2018 - 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++; experience with HPC, MPI and GPU acceleration

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, and contributed to the JAX-based *Herculens* to enable physically robust, high-resolution reconstruction

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. Ballard D. J., Enzi W. J. R., Collett T. E., et al. (including **Qu H.-M.**), Dark energy constraints from a double-source-plane gravitational lens with stellar dynamics, in prep.
4. Salama N., Ballard D. J., **Qu H.-M.**, Lewis G. F., Microlensing of Microlensing: Effects of Random Stars on the Double-Source-Plane Gravitational Lens, *MNRAS*, accepted.
5. **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* 547, 1 (2026).
6. 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* 171, 57 (2026).
7. **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).
8. 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, April 2026

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

Visitor Talk	<i>Technical University of Munich, Garching, Germany</i>	<i>Oct 2025</i>
1st Workshop Scaling Up Lensing	<i>Liège, Belgium</i>	<i>Oct 2025</i>
ASA Annual Science Meeting	<i>Adelaide, Australia</i>	<i>Jul 2025</i>
School of Physics HDR Symposium	<i>USYD, Sydney, Australia</i>	<i>Jun 2025</i>
Dark Matter under the Gravitational Lens	<i>Hong Kong, China</i>	<i>Apr 2025</i>
Mount Stromlo Student Seminar	<i>Canberra, Australia</i>	<i>Sep 2024</i>
Undergraduate Astronomy Symposium of Peking University	<i>Remote</i>	<i>Sep 2020</i>

SELECTED HONORS & AWARDS

International Research Training Program (RTP) Scholarship	<i>Mar 2023 – 2026 (expected)</i>
<i>Approximately 30 awards per year in this category at USYD</i>	
ASA Student Travel Grant, AUD2,500	<i>2025</i>
Outstanding Undergraduate Student Award, Xiamen University	<i>2022</i>
National Scholarship, PRC Ministry of Education, three times, total ¥24,000	<i>2019–2021</i>
Guangqi Fellowship, Shanghai Astronomical Observatory, CAS, total ¥14,000	<i>2019–2022</i>
Second Prize, 10 th China Undergraduate Physicists Tournament (CUPT)	<i>Aug 2019</i>
<i>(First Prize in East China Division, May 2019)</i>	

SUMMER SCHOOLS

ANITA Summer School	<i>Mount Stromlo Observatory, 2025</i>
<i>Program: Computational Multiphysics Hydrodynamics</i>	
HPC and Data in Astrophysics	<i>Remote, 2024</i>
CSST Summer School of Galaxy Sciences	<i>Remote, 2022</i>

ADVISING & TEACHING

Graduate Mentor	<i>USYD, Australia, 2026</i>
Co-mentored two undergraduate students on summer research projects focused on simulating complex gravitational lensing systems using <i>JAX</i> and <i>NumPyro</i> .	
Tutor & Demonstrator (PHYS1001–1003)	<i>USYD, Australia, 2024–2025</i>
Tutor (PHYS4123 <i>General Relativity and Cosmology</i>)	
Tutor (Modern Cosmology; High-Energy Astrophysics)	<i>XMU, China, 2021–2022</i>

REFERENCES

Prof. Geraint F. Lewis	<i>The University of Sydney, Sydney, Australia</i>
✉ geraint.lewis@sydney.edu.au	
Prof. Karl Glazebrook	<i>Swinburne University of Technology, Melbourne, Australia</i>
✉ kglazebrook@swin.edu.au	
Dr. Daniel J. Ballard	<i>The University of Sydney, Sydney, Australia</i>
✉ daniel.ballard@sydney.edu.au	