

HUIMIN QU

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

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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	<i>Mar 2023 – Sep 2026 (expected submission)</i>
Advisor: Geraint F. Lewis	
<i>Reconstructing the dark matter properties of lensing galaxies in the strong gravitational lensing regime.</i>	
B.Sc. (Honours) , Xiamen University	<i>Sep 2018 - Jun 2022</i>
Major: Astronomy GPA: 3.91/4.00 Rank: 1%	
<i>Growths of Stellar-mass Black Holes in the Center of Gamma-ray Bursts and the Lower Mass Gap</i>	

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.

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., Compound Microlensing in J1721+8842: the Einstein Zig-Zag Gravitational Lens, submitted to *MNRAS*.
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*, under review (minor revisions 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	<i>RSAA, ANU, Canberra, Australia, 2026 (Accepted)</i>
44th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 2025)	<i>Auckland, New Zealand, Dec 2025</i>
Visitor Talk	<i>Technical University of Munich, Garching, Germany Oct 2025</i>

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

SELECTED HONORS & AWARDS

International Research Training Program (RTP) Scholarship	<i>Mar 2023 – Sep 2026 (expected)</i>
<i>Approximately 30 awards per year in this category at USYD</i>	
ASA Student Travel Grant, AUD2,500	<i>2025</i>
Hunstead Support Scholarship \$5000 Outstanding Undergraduate Student Award, Xiamen University 2022	
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 (CUPU) <i>(First Prize in East China Division, May 2019)</i>	<i>Aug 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>

TEACHING

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>
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