

# Qiaoya Wu

Department of Astronomy, University of Illinois

Email : qiaoyaw2@illinois.edu

<https://qiaoyawu.github.io/>

## EDUCATION

---

- **University of Illinois Urbana-Champaign** Champaign, IL  
*PhD Candidate in Astronomy* Aug 2021 - present
- **Xiamen University** Xiamen, China  
*Bachelor of Astronomy* Sep 2017 - Jun 2021

## SELECTED HONORS AND AWARDS

---

- **CAPS Graduate Fellowship**, Center for AstroPhysical Surveys (CAPS) at UIUC 2022-2023
- **Outstanding Undergraduate Student Awards**, Xiamen University Jun 2021
- **Caiwenzhong Fellowship**, College of Physics Science and Technology, Xiamen University Apr 2020
- **Academic Excellence Scholarship**, Department of Astronomy, Xiamen University Oct 2019
- **Guangqi Fellowship**, Shanghai Astronomical Observatory, CAS May 2019
- **National Scholarship**, Ministry of Education of PRC Nov 2018

## RESEARCH EXPERIENCE

---

- **Quasars and Supermassive Black Holes** University of Illinois Urbana-Champaign  
*Prof. Yue Shen* Aug 2021 - Present
  - **Photoionization in Broad-line Regions**: Analyze HST/STIS UV spectra for quasars with different intrinsic parameters and compare with photoionization computations to study the size-luminosity relation in quasar broad-line regions.
  - **SDSS spectral analysis**: Apply spectral decomposition methods to measure quasar spectroscopic properties from public surveys, such as SDSS-IV and eFEDs.
- **Multiwavelength Observations of Stellar-mass Black Holes** Xiamen University  
*Prof. Jianfeng Wu* Oct 2018 - Jul 2021
  - **Black Hole Binary Systems**: Reduced multi-wavelength observational data and analyze dynamical properties of the secondary star in black hole binary systems MAXIJ1820+070 and A0620-00.
  - **Gamma-Ray Integrated Detectors Project**: Worked in the Gamma-Ray Integrated Detectors Project, dedicated to monitoring the transient gamma-ray sky.
- **Cosmological N-body Simulation** Xiamen University  
*Prof. Haoran Yu* Nov 2019 - Jul 2021
  - **CUBE Cosmological N-body Simulation**: Participated in the development of the high-functional cosmological N-body simulation code CUBE; improved the algorithms of dark matter halo properties computation.
  - **Angular Momentum of Halos**: Construct equations to describe the angular momentum of dark matter halos; analyzed the behaviors of rotating-supported halos using N-body simulations.
- **Black Hole Accretion Simulation** Shanghai Astronomical Observatory  
*Prof. Feng Yuan* May 2019 - Sep 2019
  - **ZEUS MHD Simulation**: Modified programs to simulate 2-D hydrodynamical non-radiative accretion flows in black hole via magnetohydrodynamics code ZEUS-2D.

## LISTS OF PUBLICATIONS

---

- **Wu, Q., & Shen, Y. (2023). Improved Redshifts for DESI EDR Quasars.** Research Notes of the AAS, 7(9), 190.
- **Wu, Q., & Shen, Yue (2022). A Catalog of Quasar Properties from Sloan Digital Sky Survey Data Release 16.** The Astrophysical Journal Supplement Series, 263(2), 42.
- **Zheng, W. M., Wu, Q., Wu, J., et al. (2022). The Disk Veiling Effect of the Black Hole Low-mass X-Ray Binary A0620-00\*.** The Astrophysical Journal, 925(1), 83.

- **Wu, Q.**, Yu, H. R., Liao, S., Du, M. (2021). **Spin mode reconstruction in Lagrangian space.** Physical Review D, 103(6), 063522.
- Cheng, S., Yu, H. R., Inman, D., Liao, Q., **Wu, Q.** and Lin, J. (2020). **CUBE–Towards an Optimal Scaling of Cosmological N-body Simulations.** In 2020 20th IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGRID) (pp. 685-690). IEEE.

---

## LISTS OF PRESENTATIONS

---

### The 23rd Guoshoujing Galaxy and Cosmology Academic Conference

Zhejiang University

*Contributed talks*

*May, 2021*

- **Talk:** Correlations between halo spins and primordial perturbations.
- **Paper:** Spin mode reconstruction in Lagrangian space

---

## APPROVED PROPOSALS

---

- **Wu, Q. (PI)**, Shen, Y. *HST UV Spectroscopy of High-accretion-rate AGNs and the Origin of Offset in the Broad-Line Region Size-Luminosity Relation.* 19 orbits with **HST**. HST-GO-17433.
- **Wu, Q. (PI)**, Wu, J., Sai, H. *Long-Term Optical Monitoring on the Black Hole Binary MAXI J1820+070.* 120 hours with **LCOGT**. CTAP2021-A0019.

---

## TECHNICAL SKILLS

---

- **Data Experience:** Hubble Space Telescope, Sloan Digital Sky Survey telescope, Very Large Telescope, Hale telescope, the Las Cumbres Observatory Global Telescope and Nanshan wide-field telescope.
- **Languages/Packages:** Python, Fortran, Matlab, Iraf/Pyraf, Xspec, CLOUDY, CUBE, ATHENA++, ZEUS, SAOImage DS9, IDL, CIAO, C++.

---

## OUTREACH

---

Mentor at the UIUC Society for Equity in Astronomy mentoring program

*2022-2023*

Volunteer at the UIUC girls astronomy summer camp

*2022*

President of Xiamen University astronomy Club

*2018-2019*

Video editor and translator of Mufu astronomy team

*2018-2020*