

Qian Hu

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EDUCATION

University of Science and Technology of China (USTC)

Hefei, China

Undergraduate in Department of Astronomy, School of Physical Sciences

Aug 2017 - Present

GPA: 3.90/4.30, Ranking: 22/350 in School of Physical Sciences

RESEARCH INTEREST

- **Gravitational-wave (GW) astronomy:** GW data analysis & its physical implications.
- **Cosmology:** Problems around dark matter, dark energy, and primordial gravitational-wave.

RESEARCH EXPERIENCE

Semi-analytical Approach for Sky Localization of Gravitational Waves

June 2020 - Present

Advisor: Prof. Linqing Wen@The University of Western Australia

- Derive an semi-analytical solution of the Bayesian posterior probability for GW source sky location.
- This localization algorithm has low latency and good self-consistency, and will be implemented to the online GW detection pipeline SPIIR.
- Paper in preparation as first author.

Research on joint observations of space-borne GW detectors

Feb 2020 - June 2020

Advisor: Prof. Wen Zhao@USTC

- Modify the Python package Bilby, and enable it to perform Bayesian analysis+MCMC/Nested sampling on space-borne GW detectors.
- Investigate the improvements of GW source localization and constraint on parity-violating gravity given by space-borne GW detector networks.
- Paper submitted to Science Bulletin as first author.

Fast gravitational wave localization based on null SNR

July 2019 - Aug 2019

Advisor: Prof. Linqing Wen@The University of Western Australia

- Use the stability of distribution of null SNR to reduce the influence caused by non-Gaussian noise during GW source localization.
- Construct probability skymap based on null SNR and coherent SNR, and give GW source localization.

Model-Independent test of the parity symmetry of gravity using GWs

Feb 2019 - Aug 2020

Advisor: Prof. Wen Zhao@USTC

- Develop a waveform-independent method to decompose right-hand and left-hand polarizations of GWs.
- By comparing arrival time of circular polarizations, give the constraint on velocity birefringence in parity-violating gravity.
- Paper published in EPJC as coauthor.

PUBLICATIONS

1. **Qian Hu**, Cong Zhou, Jhao-Hong Peng, Linqing Wen, Qi Chu, Manoj Kovalam, *Semi-analytical Approach for Sky Localization of Gravitational Waves*, in preparation.
2. **Qian Hu**, Mingzheng Li, Rui Niu, and Wen Zhao. *Constraining parity asymmetry of gravity with joint observations of space-borne gravitational-wave detectors*, submitted to Science Bulletin.
3. Wen Zhao, Tan Liu, Linqing Wen, Tao Zhu, Anzhong Wang, **Qian Hu**, and Cong Zhou. *Model-independent test of the parity symmetry of gravity with gravitational waves. The European Physi-*

calJournal C, 80(7), Jul 2020.

TEACHING

Physical experimental software design & development

July 2020 - Present

Member of a national virtual experimental teaching project

- Design and develop an application of GW data simulation, data analysis and Bayesian statistics in GW astronomy for physical experiment teaching.
- The software will be employed in experimental teaching in USTC in 2021.

Classical Mechanics and Electrodynamics

2020 Fall@USTC

Teaching assistant

- Correct homework and answer questions.

AWARDS

- National Scholarship, USTC, 2020
- Outstanding Student Scholarship, USTC, 2019
- CGN Scholarship (Gold), USTC, 2019
- Outstanding Student Scholarship, USTC, 2018

STANDARDIZED TEST

- TOEFL 101 (R: 28 L: 29 S: 22 W: 22). Best Score: 105

PROFESSIONAL SKILLS

- Python, C, Matlab, Mathematica, \LaTeX .