

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: 3.89/4.30, Ranking: 22/350 in Department of Physical Sciences

RESEARCH INTEREST

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

RESEARCH EXPERIENCE

Efficient Low-latency Sky Localization of Gravitational Wave Sources

June 2020 - Present

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

- Using Bayesian statistics, analytically marginalize the posterior distribution of GW source location and give a fast and accurate sky localization.
- This algorithm will be implemented to GW detection pipeline SPIIR.
- Paper in preparation.

Physical experimental software design & development

July 2020 - Present

National virtual simulation experimental teaching project, principal: Prof. Qingfeng Zhu@USTC

- 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 Fall 2020.

Investigating joint observations of space-borne GW detectors

Feb 2020 - June 2020

Advisor: Prof. Wen Zhao@USTC

- Modify the Python package Bilby, making it possible to perform Bayesian analysis on space-borne GW detectors (i.e. LISA, Taiji and Tianqin).
- Investigate the localization ability of space-borne GW detectors network.
- Investigate the constraint on parity-violating gravity given by space-borne GW detectors network.
- 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 constrain the influence caused by non-Gaussian noise during GW sources 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 gravitational waves.
- 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** et al. *Efficient Low-latency Sky Localization of Gravitational Wave Sources*, 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 Physical Journal C*, 80(7), Jul 2020.

AWARDS

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

STANDARDIZED TEST

- TOEFL 99 (R: 29 L: 26 S: 22 W: 22). Best Score: 102

PROFESSIONAL SKILLS

- **Programming:** Python, C, Matlab, Mathematica.
- **Others:** L^AT_EX, Linux.