Cong Zhou

"A journey of a thousand miles begins with a single step." –Laozi
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Education

University of Science and Technology of China (USTC)   *09/2016 - Present*
Yan Jici Talent Program in Physics, School of Physical Sciences
Bachelor of Science (honors) in Astrophysics   *Expected in 06/2020*
- Cumulative GPA: **3.87/4.30**
- Ranking: **1/29** in Department of Astronomy
  16/336 in School of Physical Sciences

Awards

The 39th Guo Moruo Scholarship (the **highest honor** for undergraduates in USTC)   *2019*
National Astronomical Observatory of China Scholarship   *2019*
Scholarship of Yan Jici Talent Program in Physics   *2018*
Outstanding Student Scholarship (Grade B)   *2018*
Zhang Zongzhi Sci-Tech Scholarship   *2017*
Outstanding Student Scholarship (Grade A)   *2016*

Publications

1. Qian Hu, **Cong Zhou**, Jhao-Hong Peng, Linqing Wen, Qi Chu, and Manoj Kovalam., *Semianalytical approach for sky localization of gravitational waves*, Phys. Rev. D 104, 104008

2. 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*, arXiv:1909.13007, **Nature Communications**, under review.

Research Interests

- **Gravitational Physics**
- **High energy physics**
- **Black Hole Theory**
- **Cosmology**

Research Experience

Model-independent test of the parity symmetry of gravity with gravitational waves   *09/2018 - 05/2019*
Advisor: Prof. Wen Zhao @ USTC
- Aimed to develop a waveform-independent method to examine the parity symmetry of gravity with the data of gravitational waves.
- Extract left-hand and right-hand polarization modes of gravitational waves to measure the arrival time difference between the two polarizations, thus test the parity symmetry of gravity by constraining the velocity birefringence of gravitational waves.
- Conducted tests on simulated data to prove the feasibility of this method.
- Work on real data GW150914 and GW170817. Strongly constrained the scale of parity violation.

Efficient low-latency Sky Localization of Gravitational Wave Sources   *07/2019 - Present*
Advisor: Prof. Lingqin Wen @ University of Western Australia
- Aimed to shorten the latency of sky localization of gravitational wave sources through Bayesian method to replace the current BAYESTAR method.
- Conducted a Monte Carlo experiment and chose an approximation of the true distribution of extrinsic parameters.
- Innovated an analytical solution of the Bayesian posterior probability density for gravitational wave sources sky localization, which was a numerical solution in previous method.
- Conducted various kinds of simulation tests, based on ideal power spectrum density and O2 power spectrum density, to check the self-consistency of my method through a P - P plot, which showed a very good result.

Standardized Tests

TOFEL: 103 (Reading:29; Listening:25; Speaking:23; Writing:26)   *13/10/2019*
GRE general: 317 (Verbal Reasoning:149; Quantitative Reasoning:168; Analytical Writing:3)   *11/10/2019*

Professional Skills

Programming   C, Python, Mathematica, LaTex