Duo Tao

CONTACT

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CITIZENSHIP People's Republic of China

LANGUAGE Chinese (native), English (fluent)

EDUCATION

Carleton College, Northfield, MN
B.A., Physics and Astronomy and B.A., Computer Science
expected June 2018

- *GPA*: 3.86 / 4.00
- 2015 - 2016 Dean's List
- Phi Beta Kappa
- Elected to Sigma Xi

RESEARCH

Optimization of telescope usage for gravitational-wave electromagnetic counterparts
Optimize the telescope usage to maximize the probability of detecting the EM counterpart after a gravitational wave event.

Coherence analysis of interferometer noises
Analyze the sources of the noises in aLIGO using the coherence data of the auxiliary sensors. About 500 noises have been studied since O1.

Optimization of signal recycling optics for SGWB search
Study the signal recycling optics of the advanced LIGO and optimize the optical parameters for SGWB search under different interferometer designs

PUBLICATIONS

1. Benjamin P Abbott et al. *A Search for Tensor, Vector, and Scalar Polarizations in the Stochastic Gravitational-Wave Background*. (under internal review)
2. Collabration. *Full Band All-sky Search for Periodic Gravitational Waves in the O1 LIGO Data*. (under internal review)
3. Duo Tao and Nelson Christensen. "Optimizing signal recycling for detecting a stochastic gravitational-wave background". In: *Classical and Quantum Gravity* (2018). URL: http://iopscience.iop.org/10.1088/1361-6382/aac148
4. Michael W Coughlin et al. "Optimizing searches for electromagnetic counterparts of gravitational wave triggers". In: *Monthly Notices of the Royal Astronomical Society* (2018), sty1066. DOI: 10.1093/mnras/sty1066. eprint: /oup/backfile/content_public/journal/mnras/pap/10.1093_mnras_sty1066/1/sty1066.pdf. URL: http://dx.doi.org/10.1093/mnras/sty1066
5. P. B. Covas et al. "Identification and mitigation of narrow spectral artifacts that degrade searches for persistent gravitational waves in the first two observing runs of Advanced LIGO". in: *Phys. Rev. D* 97 (8 Apr. 2018), p. 082002. DOI: 10.1103/PhysRevD.97.082002. URL: https://link.aps.org/doi/10.1103/PhysRevD.97.082002
6. Benjamin P Abbott et al. "Directional limits on persistent gravitational waves from Advanced LIGO's first observing run". In: *Physical review letters* 118.12 (2017), p. 121102
7. Benjamin P Abbott et al. "All-sky search for periodic gravitational waves in the O1 LIGO data". In: *Physical Review D* 96.6 (2017), p. 062002

8. Benjamin P Abbott et al. "Upper limits on the stochastic gravitational-wave background from Advanced LIGO's first observing run". In: *Physical review letters* 118.12 (2017), p. 121101

PRESENTATIONS

June and November 2017: Stochastic Group Telecon
"Signal Recycling for SGWB Search"

March 2017: LIGO-Virgo Collaboration Meeting, Pasadena, California USA
"O2 Stochastic Data Quality Update"

August 2016 LSC-Virgo Collaboration Meeting, Glasgow, Scotland
"Coherence Tool: O1, ER9, $\rightarrow$ O2"

EXPERIENCE

Electronics Lab Assistant Nov 2017 - Jan 2018
Physics and Astronomy Department, Carleton College
- Build a website that displays 464 data fields and controls 30 sensors of Carleton weather tower with PHP and MySQL

Grader of PHYS 343 Electronics Sep 2017 - Nov 2017
Physics and Astronomy Department, Carleton College

Electronics Lab Assistant Sep 2016 - Jun 2017
Physics and Astronomy Department, Carleton College
- Built the software USB interface in C on Linux to collect data from a sunlight spectrometer

Intern Nov 2015 - Jan 2016
Quantitative Investment Department, 91 JinRong
- Developed a web-based stock analysis tool with jQuery, Node.js and MySQL

Math Tutor Nov 2014 - Jun 2016
Mathethematics and Statistics Department, Carleton College

HONORS & AWARDS

SpaceX Hyperloop Pod Design Weekend (one of 115 teams selected (out of 1000+) to attend)

Andrew W. Mellon Broadening the Bridge Grant

Honorable Mention in 2017 Interdisciplinary Contest in Modeling (ICM)

COMPUTER SKILLS

Here is a partial list of my skills that I think are widely applied in research.
MATLAB, Mathematica, Java, Python, C, Bash, Web Development, SQL