

Qunfeng Jiang

PERSONAL INFORMATION

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Address: Dept. of Physics, Fudan Univ., No.220 Han
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EDUCATION

Fudan University
Bachelor of Science in Physics

Shanghai, China
Sept. 2019 – Present

PUBLICATIONS

- Yu, Z., **Jiang, Q.**, Abdikamalov, A.B., Ayzenberg, D., Bambi, C., Liu, H., Nampalliwar, S. and Tripathi, A., 2021. Constraining the Konoplya-Rezzolla-Zhidenko deformation parameters. II. Limits from stellar-mass black hole x-ray data. *Physical Review D*, 104(8), p.084035.
- Wang, X., Kong, D., Guo, M., Wang, L., Gu, C., Dai, C., Wang, Y., **Jiang, Q.**, Ai, Z., Zhang, C. and Qu, D., 2021. Rapid SARS-CoV-2 nucleic acid testing and pooled assay by tetrahedral DNA nanostructure transistor. *Nano letters*, 21(22), pp.9450-9457.
- Gou, Q., Li, Z., Giuseppe, D., Hou, C., Liu, J., Chang, X., Lv, H., Yang, L., Lin, S., Addazi, A., Liu, X., Kang, M., Marciano, A., Gou, J., Yin, S., Wang, Y., Yang, Z., Tian, X., Zhang, Q., Miozzi, S., Shao, C., Dou, J., Ou, X., Xue, Y., Fu, L., Zuo, Q., Wang, Z., Wang, Y., Gong, C., Yu, Z., Li, J., Liu, L. and **Jiang, Q.**, 2022, March. Observation of Horizontal Air Showers with LHAASO-KM2A. In *37th International Cosmic Ray Conference*. 12-23 July 2021. Berlin (p. 364).
- Jess Wade, Melissa Castrillón, **Qunfeng Jiang**(Chinese translator), 2022. *Nano: The Spectacular Science of the Very (Very) Small*. Zhejiang Science and Technology Press.

RESEARCH EXPERIENCE

California Institute of Technology
Supervisor: *Javier Garcia, Ph.D, Research Assistant Professor*

Pasadena, US
July. 2022 – Present

Studying the Inner Accretion Flows of Black Hole X-ray Binary H 1743-322 with RXTE and NuSTAR Data

- Written six Python scripts with PyXspec to perform automatic spectra fitting with more than 557 *RXTE* observations of the black hole binary H 1743-322 in the outbursts from 2003 to 2011.
- Performed global reflection modeling with *relxill* model to measure key physical properties like spin and inclination angle with *RXTE* and *NuSTAR* data.

National Astronomical Observatories, Chinese Academy of Sciences
Supervisor: *Roberto Soria, Ph.D, Professor*

Beijing, China
July. 2021 – Sept. 2021

Testing the existence of two coronae of the black hole candidate MAXI J1348-630 in the 2019 outburst observed by INSIGHT-HXMT

- Reduced the *INSIGHT-HXMT* observation of the black hole candidate MAXI J1348-630 in the 2019 outburst.
- Applied *relxill* model to test the existence of two coronae to confirm results from QPOs models.

Fudan University
Supervisor: *Cosimo Bambi, Ph.D, Professor*

Shanghai, China
Sept. 2020 – June. 2021

Constraining the KRZ deformation parameters with stellar mass black hole X-ray data

- Reduced the *NuSTAR* observation of stellar mass black hole EXO 1846+031.
- Applied *relxill_nk* model which assumed KRZ metric, a non-Kerr metric.

- A paper published in Physical Review D.

Supervisor: *Antonino Marciano, Ph.D, Associate Professor*

Sept. 2020 – July 2021

Simulations of cosmic ray air shower with different hadronic models

- Simulated extensive air showers with CORSIKA software and generated muon lateral distribution histograms with C++ codes.
- Applied hadronic model Sibyll 2.3c. Different models are about to be tested.
- Plan to apply machine learning techniques to explore parameter space.

Supervisor: *Dacheng Wei, Ph.D, Professor*

June 2020 – Oct. 2020

Electrical devices based on DNA molecules and their nanostructures

- Fabricated a field-effect transistor (FET) with an actuatable liquid-gating sensing interface with DNA electro-actuators (DNA-EAs) manipulated electrostatically at the liquid-gate surface and realized direct detection of SARS-CoV-2 nucleic acids.
- Used secondary current distribution module in COMSOL Multiphysics® to simulate the electrical field distribution when an electro-actuation voltage was applied at the gate.

SELECTED AWARDS AND HONORS

National College Student Curricular Academic Science and Technology Works Competition

First Prize in Fudan University

May. 2021

- A national academic competition for undergraduates' research works in science and technology.
- The project, Constraining the KRZ deformation parameters with stellar mass black hole X-ray data, was awarded the first prize in Fudan section and the third prize in Shanghai section.
- Collaborated with teammates to revise project and gave presentations in the defense.

Xiyuan Scholar

May. 2021

Awarded for finishing research work in Fudan Undergraduate Research Opportunities Program(FDUROP)

Junzheng Scholar

May. 2022

Awarded for finishing research work in Fudan Undergraduate Research Opportunities Program(FDUROP)

INVITED TALK

The Origin and Goals of X-ray Astronomy

Apr. 2022

I was invited by the Fudan Liberal Arts Society to give a talk about the history and task of X-ray astronomy in an activity called *the Light of Subjects*, which aimed to share experience in different fields by undergraduates and graduates.

COMPUTER SKILLS

Languages: Python, C++, L^AT_EX

Softwares: Wolfram Mathematica, Matlab, Xspec, PyXspec, CORSIKA, Arduino, COMSOL Multiphysics, Origin, Git, Office

OUTREACH EXPERIENCE

Director of Translation

Sept. 2021

The Asia Office of Astronomy for Development, the International Astronomical Union)

- I organized a translation group at Fudan Astronomy Society to help introduce the Asia Office of Astronomy for Development to social media in China.

Intern

June 2021 – Sept. 2021

Scientific American(Chinese Version)

- I searched and collected the newest scientific news and articles, translated them into Chinese, and published them on the social media of the Chinese version of Scientific American to spread the newest progress in STEM to the public.

Director

Aug. 2020

Tianwen Project, Fudan Astronomy Society

- I am a core organizer of a charity summer camp on astronomy for 10 days in an impoverished area in Jiangxi Province and we volunteered to teach about 40 students basic knowledge on astronomy, STEM, and how to prevent from COVID-19 epidemic.

Invited Author

Aug. 2021

*Guanxiang Magazine(Observation in English), Fudan Astronomy Society***LEADERSHIP EXPERIENCE**

Director

Sept. 2020 – Sept. 2021

Outreach Department, Fudan Astronomy Society

- I'm devoted to providing more opportunities in astronomy to students from different backgrounds to improve the diversity and inclusion in this field.
- I organized several volunteer activities for astronomy museums and outreach lectures on astronomy, and invited several distinguished professors to give a lecture every semester.

Director

Apr. 2022 – Present

Western Political Thoughts Reading Seminars, Fudan University