Qunfeng Jiang

Personal Information

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Education

Fudan University — Shanghai, China
Bachelor of Science in Physics — Sept. 2019 – Present

Selected Awards and Honors

Caltech Summer Undergraduate Research Fellowships (SURF) — June. 2022
Awarded $6,840 grant to conduct research at Caltech under the guidance of Prof. Javier Garcia

Junzheng Scholar — May. 2022
Awarded $1200 grant to conduct research in Fudan Undergraduate Research Opportunities Program

Xiyuan Scholar — May. 2021
Awarded $720 grant to conduct research in Fudan Undergraduate Research Opportunities Program

National College Student Curricular Academic Works Competition — May. 2021
Awarded $720 grant for my research winning the first prize in Fudan University

Rising Star Scholar — May. 2020
Awarded $300 grant to conduct research in Fudan Undergraduate Research Opportunities Program

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 — Pasadena, US
Supervisor: *Javier Garcia, Ph.D, Research Assistant Professor* — 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 including spin and inclination angle with *RXTE* and *NuSTAR* data.

National Astronomical Observatories, Chinese Academy of Sciences Beijing, China
Supervisor: *Roberto Soria, Ph.D, Professor* 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 Shanghai, China
Supervisor: *Cosimo Bambi, Ph.D, Professor* 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 a new non-Kerr model to test General Relativity.
- Published a paper 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.

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.

Invited Talk

The Origin and Goals of X-ray Astronomy Apr. 2022

Invited by the Fudan Liberal Arts Society to give a talk about the history and progress of X-ray astronomy.

Computer Skills

Languages: Python, C++, LaTeX

Softwares: Wolfram Mathematica, MATLAB, XSPEC, PyXPEC, CORSIKA, Arduino, COMSOL Multiphysics, Origin, Git, Office

Outreach and Leadership Experience

Director Sept. 2020 – Sept. 2021
Outreach Department, Fudan Astronomy Society

- Organized a 7-day volunteer summer camp on astronomy for more than 50 students with 20 courses in an impoverished rural area in South China.
- Coordinated activities with 50 volunteers for local communities including museums and the Asia Office of Astronomy for Development, the International Astronomical Union.