Gong, Xingwei

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Education

Nanjing University, Nanjing, China

Bachelor of Science in Astronomy (Astrophysics) (Elite Program) 09.2021 - Present

Overall GPA: 4.509/5.0 (90.2/100); Ranking: **2/31 (6.4%)**

Related Courses:

Linear Algebra:	90/100	Electrodynamics:	95/100
Calculus I, II:	83, 92/100	Statistical Physics:	92/100
Statistics:	98.8/100	Classical Mechanics:	98/100
Numerical Recipes:	95/100	Quantum Mechanics:	84/100
Observational Astrophysics:	90/100	Mathematical Methods for Physics:	98/100
General Astronomy I, II:	94, 91/100	Radiative Processes in Astrophysics	(Ongoing)
		Magnetohydrodynamics	(Ongoing)

Pennsylvania State University, State College, United States

Visiting Research Student 02.2024 - 06.2024

Research Experience

School of Astronomy & Space Science, Nanjing University 12.2022 - Present

Supervisors: Prof. Ruo-Yu Liu, Dr. Hai-Ming Zhang

Project : A Machine Learning Approach of Enhancing the Angular Resolution of LHAASO

Description: In this project, we train a super resolution machine learning model, generate simulation data with PSF of LHAASO. By applying the machine learning model to LHAASO observation, we found that it can enhance the angular resolution compared to the traditional likelihood ratio test. We gave a poster presentation on the The Second LHAASO Collaboration Conference in 2024.

Responsibilities:

- Generating training dataset
- Training model
- Result analysis

School of Astronomy & Space Science, Nanjing University 06.2023 - Present

Supervisor: Prof. Ruo-Yu Liu

Project: A Second Relativistic Particle Component in GRB Afterglow: Insights from LHAASO's Observation on GRB 221009A (in prep)

Description: We explore the stochastic acceleration via turbulence in a GRB scenario with numerical methods. We consider the transit-time acceleration via turbulence in the downstream of forward shock with a Fokker-Planck approach. We provide a possible explanation of the hard spectrum of GRB 221009A afterglow in VHE band with this model. I presented a poster on The Second LHAASO Collaboration Conference in 2024, and my first-author paper is being prepared for submission.

Responsibilities:

- Developing the code of numerical computation
- Tuning parameters and analyzing results

Department of Astronomy and Astrophysics, Pennsylvania State University 02.2024 - 04.2024

Supervisors: Prof. Derek B. Fox, Prof. Michael Eracleous

Project: A Proposal for Observing X-ray Broad Absorption Feature in TXS 0506+056 with XRISM

Description: We propose a XRISM observation of the neutrino emitting blazar, searching for broad absorption feature of the outflow against the luminous disk and jet. We try to explore the hadronic acceleration process of this source.

Responsibilities:

- Participate in writing of proposal
- Feasibility evaluation of observation
- Producing simulations of the XRISM observation

Department of Astronomy and Astrophysics, Pennsylvania State University 04.2024 -06.2024

Supervisor: Prof. Derek B. Fox

Project: Analysis of IceCube Real-Time Alerts

Description: We develop a Monte-Carlo method to study the IceCube alerts of cosmic neutrinos. We attempt to locate potential neutrino sources or constrain the neutrino flux of the brightest neutrino source based on simulations with FIRESONG.

Responsibilities:

- Making simulations with FIRESONG.
- Contributing to code development.
- Editing the Wiki page of IceCube

Certifications

TOEFL iBT, 111/120 11.2023
(Reading: 30; Listening: 28; Speaking: 25; Writing:28)

CET6, 587/710 12.2022

CET4, 674/710 06.2022

DSD II Deutsches Sprachdiplom der KMK, C1 03.2019

Honors & Awards

Annual Scholarship of National Astronomical Observatories, Chinese Academy of Sciences 12.2022

People's Scholarship: 2nd Prize 12.2022
1st Prize 12.2023

Elite Program Scholarship: 2nd Prize 11.2022
2nd Prize 11.2023

Skills

Programming Skills	(Advanced) Python, C++ (Basic) C
Tools	PyTorch, LaTeX, Git, Linux, HEASoft, XSPEC, IRAF
Computing Methods	Machine Learning Numerical computing methods MCMC
Communication Skills	Mandarin Chinese (native), English (fluent), German (conversational)