

# CURRICULUM VITAE

Yiheng Jiang

## Education

**Zhejiang University**

*Major in Physics*

**Sep. 2020 – Jun 2024**

GPA 88.6/100 (3.83/4.00) Rank 1/99

## Core Courses

- Computational Physics (98/100)
- Methods of Mathematical Physics(A)I(90/100)
- Methods of Mathematical Physics(A)II(94/100)
- Theoretical Mechanics(95/100)
- Thermodynamics and Statistical Physics(95/100)
- Solid State Physics(94/100)
- An Introduction to Astrophysics(99/100)
- Electrodynamics(91/100)
- Quantum Mechanics I (81/100)
- Introduction to Astronomy (100/100)

## Publication

**A Physical Model for Radio and X-ray Correlation in Black Hole X-ray Binaries**

Jiang, Y., Li, S., Cao, X., et al. 2024, MNRAS, 532, 4524, doi:10.1093/mnras/stae1777

*Published on 23 July 2024*

## Research Experience

### Machine Learning on Quantum Chromodynamics

Research assistant with Zhen Liu, School of Physics and Astronomy@University of Minnesota

*June 2024 – Now*

- Build a VAE (Variational Autoencoder) machine learning model using Python to train on high-dimensional data similar to jet patterns.
- Check the representation and the dimensionality of data in the latent space.
- to be written..

### X-ray Constraints LyC Escape Fraction

Visiting student with Zhenya Zheng, Shanghai Astronomical Observatory@Chinese Academy of Sciences

*July 2024 – Now*

- Selected X-ray undetected LyC emitters at  $z \simeq 3.5$  in 7Ms *Chandra* Deep Field South (CDF-S) region.
- Extracted the counts of these sources and converted them to energy flux and standard luminosity ( $L_{2-10\text{keV}}$ )
- to be written..

### A Physical Model for R-X Correlation in BHXRBs

Research assistant with Xinwu Cao, School of Physics@Zhejiang University

*Jun 2022 – Apr.2024*

- Calculated the large-scale magnetic fields of Advection Dominated Accretion Flows (ADAF) with magnetic outflows to find the strength of the vertical magnetic field at  $r_{\text{ISCO}}$ .
- Calculated the jet power via the B-Z mechanism and X-ray luminosity increasing with mass accretion rate, and reproduced the standard R/X correlation.
- Raised an issue that different state transitions of the BHXRBs cause different correlations between Radio and X-ray luminosity, and successfully proved it.

### How does Turbulence affect Star Formation ?

Research assistant with Renyue Cen, School of Physics@Zhejiang University

*Jun 2023 – Jun.2024*

- Made a distance-entropy phase diagram of a test case in the Yt Project.
- Used MUSIC to generate the initial condition (IC) files, ran a Nbody simulation with only dark matter (DMonly simulation) from  $z=100$  to  $z=0$  and selected a suitable cluster.
- Zoomed in on the area around the cluster, then refined the simulation with baryon, turned on the hydro method, and put more physical processes into the simulation.

## Coursework Projects

**Biprism interference experiment (95/100) | Mathematica**

*Nov.2021 - Dec. 2021*

- Responsible for conducting experiments and analyzing data.

**Analysis gas around a galaxy with YT project (92/100) | Python**

*Mar 2022 – Jun 2022*

- Analysed the dynamical process of cold gas and hot gas around the galaxy, derived temperature distributions with phase plots of CGM through my code in yt Project, and hypothesized radiation and cooling regimes.

Invited Conference Talk

**First CLAGN Seminar** | *Hosted by Astronomical Institute, School of Physics,ZJU & Department of Astronomy,HUST* Dec. 2023

- A Physical Model for Radio and X-ray Correlation of Black Hole X-ray Binaries.

**The 2024 Annual Meeting of the Chinese Astronomical Society** | *Hosted by Chinese Astronomical Society* Oct. 2024

- A Physical Model for Radio and X-ray Correlation of Black Hole X-ray Binaries.

Award of Scholarships

National Scholarship	Top 1% @ School of Physics	Oct. 2022
Zhejiang University 1 <sup>st</sup> Scholarship	Top 3 % @ School of Physics	Oct. 2022, 2023
National Astronomical Observatory Scholarship		Nov. 2021
Provincial outstanding undergraduate graduates	Top 3 % @ School of Physics	Mar. 2024

Skills

- Platform: Linux, Windows, Mac
- Language: Python  $\geq$  Mathematica = C++ = C

Leadership and Activities

- Presidium of Student Union of School of Physics Apr. 2022 - Mar.2023
- Volunteer teaching at the Second Senior High School, Yun Country, Yunnan Province Jul.2022
- Bronze medal in University Athletic Championships of Zhejiang, Men’s 400m Final May.2023