Zifan Tang

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EDUCATION

Yunnan University, YNU, BSc. in Physics Sept. 2020 – Present

- GPA: 3.7/4.0 (Rank:1/50)
- Excellent Performance Course: Fluid Mechanics (B, rank 1/30), General Relativity (A), Mathematical Methods for Physicists (A), Cosmology(A).

University of Notre Dame July 2023 – Aug. 2023

- International Summer Undergraduate Research Experience Program, iSURE
- Learning the data processing of M33 Galaxy

University of California, Santa Barbara, UCSB Jan. 2024 – Mar. 2024

- Exchange Student
- Excellent Performance Course: Stellar Stru./Evol.(A), Planets(A-).

RESEARCH EXPERIENCE

Nuclear Bursts Induced by Stellar-Mass Black Hole Accretion in the Disks of AGN May 2023 – Present

Advisor: Associate Prof. Yang Luo, YNU

Overview: A new type of accretion-modified star (AMS) could form in the accretion disk of an AGN. The AMS could collapse to a sMBH at the end stage of stealer evolution. This sMBH accretes fast, which could trigger nuclear burning, and bring some new features.

- Establish an accretion model for Super-Eddington accretion disks with nuclear reactions
- Derived the condition of thermal instability. Programmed to get numerical solutions of steady state by using Python
- Nuclear reaction is hard to induce instability due to the high advection cooling rate brought by the fast accretion
- Under extremely low viscosity parameters, the innermost of the disk is degenerate-pressure-dominated.

Simulation and Visualization of Phase Transitions in the 2D Ising Model May 2023 – July 2023

Advisor: Regent's Prof. Bo Zheng, Prof. Xianghua Li, YNU

Overview: Implemented Monte-Carlo methods to simulate the Paramagnetism-Ferromagnetism phase transition in the 2D Ising model as temperature varies. Course project of Statistical Physics and Computational Physics (all in grade A)

- Calculated thermodynamic parameters and order parameters of the system, analyzed the simulation results, and summarized differences in accuracy and speed between Metropolis Algorithm and Wolff Algorithm
- Created a GIF animation for the evolution process of the 2D Ising model to illustrate the system's condensing process in the same spin direction

Measuring Minuscule Elongation: a project for Chinese Undergrad Physics Experiment Competition (CUPEC)

Advisor: Dr. Jian Hu, YNU May 2020 – Oct. 2020

Overview: Used the principle of diffraction to measure the elongation of metal wires and calculate its Young's Module.

- Set up an optical path in the perpendicular direction of a metal wire, use a narrow slit attached to the wire to create the conditions for single-slit diffraction
- Measured the positions of dark fringes before and after elongation by an optical power meter to calculate Young's Module of metal wires; applied method of successive differences for data processing to reduce measurement errors
- Led the three-person team to win the First Prize of YNU and the National Second Prize

Development of a 24-Point Game Based on LabView May 2022 – July 2022

SKILLS & QUALIFICATIONS

- **YNU First Prize Scholarship**, Sept. 2021
- **Programming and Software:** Proficient in Python, MATLAB, and LabView
- **Languages:** Proficient in English (IELTS: 7.0)
- **Standardized tests**: GRE 315 (Quantitative Reasoning: 163, Verbal Reasoning: 152); GRE-Physics (810)