

# Xiaoshuo Zhang (张晓硕)

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Taishan College, Shandong University, Jinan, China 250100

## EDUCATION

**Shandong University**, Jinan, China

Sep. 2021 - Present

*Undergraduate student in Physics*

– **Honor Science Program of Taishan College**

Selected from all freshmen each year because of outstanding academic performance, about 20/10000

– **GPA:** 3.92/5.00 (3.82/4.00 in U.S. scale)

– **Some Major Courses:** Mathematical Analysis II: (97, A+), Electromagnetism: (94/100, A),  
Theoretical Mechanics: (92/100, A), Quantum Mechanics: (90/100, A)

## RESEARCH INTEREST

I am an outstanding student with great patience and excellent self-learning ability. I am currently interested in using algebraic topology to study condensed matter systems.

## RESEARCH EXPERIENCE

**Finite Spin- $S$  Effect in Holstein Primakoff Transformation**

May. 2023 - Present

*University of Science and Technology of China; Supervised by Prof. Ming Gong*

- Investigated the energy spectrum of spin waves in kagome lattices.
- Employed quantum field theory to study the influence of many-body effects on magnon energies at finite temperatures.
- Assessed the impact of finite spin effect on the properties of the material.

**Experimental Study of MoS<sub>2</sub> Excitonic State Population**

Oct. 2022 - Oct. 2023

*Shandong University; Supervised by Prof. Xiaotao Hao*

- Did the mechanical exfoliation and Au-assisted mechanical exfoliation to get monolayer MoS<sub>2</sub>.
- Did the measurement of PL spectrum and Raman spectrum of MoS<sub>2</sub>.
- Fabricated VdWs heterostructures of MoS<sub>2</sub> / WS<sub>2</sub>.
- Explored some special properties in moire lattice.

**Numerical Simulation of Black Hole Accretion**

2022 Summer

*Shanghai Astronomical Observatory, Chinese Academy of Sciences; Supervised by Prof. Feng Yuan*

- Studied the black hole accreting gas using the hydrodynamic numerical simulation program ZEUS.

## KNOWLEDGE AND SKILLS

- **Theoretical Knowledge:** Knowledge about quantum mechanics, quantum field theory, statistical theory, solid state physics and statistical field theory.
- **Programming Ability:** Working experience: L<sup>A</sup>T<sub>E</sub>X, Mathematica, MATLAB  
Familiar with: Python, C

## AWARDS

- *Academic Scholarship*, Shandong University Nov. 2023
- *Outstanding Student*, Winter Camp of Astrophysics, Tsung-Dao Lee Institute Jan. 2023
- *Academic Scholarship*, Shandong University Oct. 2022
- *Second Prize*, China Undergraduate Physics Tournament, East China Jul. 2022
- *First Prize*, Physics Competition for College Students, Shandong Province Oct. 2021

## OTHER ACTIVITIES

**Joint TDLI and INPAC Summer School in Particle Physics 2023**

Jul. 2023

- The school covers recent experimental developments in dark matter, neutrino, collider and muon physics where significant progress has been achieved.

**Tsung-Dao Lee Institute Winter Camp of Astrophysics**

Jan. 2023

- Studied the method of estimating the mass of a boson star, and numerically predict the upper bound of the mass using shooting method of ODE.

**Taishan Seminar**

Mar. 2022 - present

- I have been actively participating in the Taishan Seminar, a long-term student-led study group, since its early stages. As a contributor, I frequently deliver lectures on various subjects, including quantum field theory, quantum mechanics, electrodynamics, and other cutting-edge topics. Website: <http://physicsseminar.com/>

## LANGUAGES

- Chinese (native speaker)
- English (fluent), TOEFL iBT: 96/C1
- French (basic knowledge)
- Japanese (basic knowledge)