

# CURRICULUM VITAE OF JIAZHEN SHAO

• 314-906-6265 • jan.shao@wustl.edu • [Github](#) • Updated: February 12, 2025

## EDUCATION

**PhD in Physics, Washington University in St. Louis, School of Art & Science** Dec 2024 – Present

**BS in Physics, Sun Yat-Sen University (SYSU), School of Physics and Astronomy (SPA):** Sep 2019 – Jun 2024

- GPA 4.324/5.0 (SYSU grading system), 3.94/4.0 (WES grading system), ranking 1/123
- Transferred major from Microelectronic Engineering to Physics after the first year.

## RESEARCH INTERESTS

Currently interested in particle physics, BSM physics, astrophysics, and particularly, the interdisciplinary areas in between, such as the studies of neutron star mergers.

## RESEARCH EXPERIENCE

[1] (On going) Phase conversion dissipation in neutron star mergers Jan 2025 – Present

- Aiming at calculating speed of phase boundary between quark matter and nuclear matter in neutron star merger

[2] (On going) Implications of multi-messenger signal from Neutron Star Mergers on  $Z'$  boson Dec 2024 – Present

- Aiming at placing constraints from neutron star merger data on  $Z'$  boson parameter space

[3] Classification of the Discrete Symmetries for the Four-Higgs-Doublet Model (4HDM) Jan 2022 – Jun 2024

- Classified discrete symmetry groups for 4 Higgs-Doublet-Model
- Extended calculation tools using GAP and Python to study multi-Higgs-Doublet-Model

[4] Participated in [Tiange \(GRID\) Project](#), Sun Yat-Sen University Branch. Jan 2021 – Dec 2021

- Designed the preamplifier circuit for the space gamma-ray burst detection satellite.

[5] Cosmic time evolution simulation Sep 2021 – Dec 2021

- Used homotopy algorithm to simulate cosmic time evolution based on  $f(R)$  gravity model

## CONFERENCE

- Presenter on Higgs 2023. [One class of non-abelian 4HDM symmetry](#)  
12:00 PM - 12:15 PM, 30 Nov 2023, C305 Main Building, IHEP, Beijing, China
- Presenter on Scalars 2023. [One class of 4HDM symmetry](#).  
4:15 PM - 4:30 PM, 15 Sep 2023, Pasteura 5 Street, 02-093 Warsaw, Poland
- Presenter on Center for Theoretical Physics (CFTP) Seminar. [One Class of 4HDM Symmetry](#).  
11:00 AM - 12:00AM, 20 Jul 2023, via Zoom in Room 2.8.3, Physics Dept, Lisbon, Portugal

## PUBLICATIONS

- Jiazhen Shao(SYSU), Undergraduate Thesis: "Classification of the Discrete Symmetries for the Four-Higgs-Doublet Model", e-print: [\[arXiv:2501.01977\]](#)
- Jiazhen Shao(SYSU), Igor P. Ivanov(SYSU), Mikko Korhonen(SUSTech) "Symmetries for the 4HDM. II. Extensions by rephasing groups", DOI: [10.1088/1751-8121/ad7340](#), e-print: [\[arXiv:2404.10349\]](#)
- Jiazhen Shao(SYSU) and Igor P. Ivanov(SYSU), "Symmetry for the 4HDM: extensions of cyclic groups", DOI: [10.1007/JHEP10\(2023\)070](#), e-print: [\[arXiv:2305.05207\]](#)

## AWARDS

---

- 2024 Sun Yat-Sen University Outstanding Undergraduate Thesis Award
- 2020, 2021 National Scholarship for Undergraduate Students, awarded to top %1.5 of students
- 2019, 2020, 2021 Sun Yat-Sen University Scholarship of Excellence, First Prize, awarded to top %10 of students
- 2021 Honorable Mention in American College Students Mathematical Contest in Modeling
- 2022 Outstanding, National-Level Innovation and Entrepreneurship Program for College Students
- 2020 Outstanding, University-Level Innovation and Entrepreneurship Program for College Students

## EXTRACURRICULAR PURSUIT

---

- |                         |   |                     |
|-------------------------|---|---------------------|
| • Assistant(Translator) | World of ultra-fast Phenomena Course      | Feb 2023 – May 2023 |
| • Tutor and President   | SPA's Student Development Center          | Sep 2021 – Jun 2023 |
| • Commissary of Studies | Class 3 of Physics Major, SPA, Grade 2020 | Oct 2020 – Jun 2024 |
| • Team Member           | Ping-Pong Team of the SPA                 | Oct 2020 – Jun 2024 |