

CURRICULUM VITAE OF JIAZHEN SHAO

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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: [\[arXiv:2305.05207\]](#)

SKILLS

- IELTS Overall 7.5 with Speaking score 7.5, Reading score 7.5, Listening score 8.0, Writing score 7.0
- Skilled in: Python, C, C++, Wolfram Mathematica, GAP, Matlab

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

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|-------------------------|-------------------------------------------|---------------------|
| • 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 |