Wenyu Shan

School of Physics, Peking University

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Education

Peking University, BSc in Atomspheric Physics (Expected Graduation: 2026) Sept 2022 – Present

- **GPA:** 3.79/4.00
- **TOEFL:** 101/120; **GRE:** 318/340
- **Coursework:**
  Physics: Introduction to atmospheric sciences (A), Fundamentals of Atmospheric Physics (A), Fundamentals of Atmospheric Dynamics (A+), Theoretical Mechanics (A), Electrodynamics (A+), Computational Physics (A+)
  Mathematics: Calculus (A), Linear Algebra (A-), ODE&PDE (A-), Complex Function (A), Probability and Statistics Curriculum (A+)
  Computation: Introduction to Computation (A-), Introduction to data science (A+)

Research Interest

- Atmospheric Dynamics; Climate Models
- Machine Learning
- AI for Science

Research Experience & Projects

Temporal Prediction of Velocity Fields Based on Machine Learning. Feb 2024 – Jul 2025
Advisor: Prof. Dorian Abbot & Prof. Jun Yang & Prof. Pedram Hassanzadeh

- Conducted Multilayer Shallow Water Barotropic Wind Field Simulation.
- Performed temporal prediction using the wind field generated by the simulation based on machine learning.

Delving into RL for Image Generation with CoT: A Study on DPO vs. GRPO (Accepted by NeurIPS 2025) Feb 2025 – Jul 2025
Co-authors: Chengzhuo Tong, Ziyu Guo, Renrui Zhang

- Conducted a comparative study on DPO vs. GRPO for autoregressive image generation.
- Investigated domain generalization, reward-model sensitivity, and the effects of scaling.

Can AI Outperform SQG Theory in Climate Diagnostics? (Soon to be published) Jul 2025 – Present
Advisors: Prof. Dorian Abbot & Prof. Eli Tziperman & Prof. Pedram Hassanzadeh

- Conducted Surface Quasi-Geostrophic (SQG) simulation to estimate inner flow dynamics of layered fluid systems.
- Trained AI models, demonstrating that the AI-based approach outperforms traditional SQG theory in climate diagnostics.

Conferences & Academic Activities

Participated in Shanghai Jiao Tong University Physics Summer School Jul 2024

- Attended lectures on quantum field theory, quantum computing, cosmology, and astrophysics.
- Participated in seminars on differential geometry and general relativity.

Participated in Distinguished Lectures on Planetary Atmospheres Aug 2024

- Attended lectures focused on Planetary Atmospheres.

Participated in National Symposium on Planetary Science Oct 2024

- Attended lectures on Exoplanet Atmosphere, Atmosphere and Oceans of the Solar System Planets, Exoplanet Detection, and others.
- Gave a report titled "Temporal Prediction of Velocity Fields Based on Machine Learning."

Summer Research at University of Chicago Jul 2025 - Sept 2025

- Collaborated with Prof. Dorian and Prof. Eli on "Can AI Outperform SQG Theory in Climate Diagnostics?"
- Attended Jurnel Club "AI4Climate" given by Prof. Dorian and Prof. Pedram

Technical & Programming Skills

Programming Languages: Python, Matlab, C++

Simulation Software: Origin, Mathematica

Other Tools: DaVinci, Lightroom

Honors & Awards

Peking University Model Student (This award is given to the top 10% of students based on academic performance and contributions)	2024 - 2025
Qin Wanshun-Jin Yunhui Scholarship	2024 - 2025
Peking University Model Student	2023 - 2024
Geru Zheng Outstanding Student Scholarship	2023 - 2024
Peking University Outstanding Academic Achievement Award	2022 - 2023
Peking University Third-Class Scholarship	2022 - 2023