# Zhizheng Zhao

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## EDUCATIONAL BACKGROUND

**Peking University**                    Beijing, China                    09/2022 – present
- *Major in Physics*:                                      Grade: **83.4**/100.0
  *(Consistent improvement from 82.1 in the first semester to 89.3 in the most recent semester; semester Grades: 82.1, 83.6, 79.1, 86.5, 89.3)*

## REASEARCH INTEREST

- **Chain-of-Thought Reasoning for Enhancing AI Model Performance.**
- **Detector development.**
- **Reinforcement Learning.**

## REASEARCH EXPERIENCES

**Research on Chain-of-Thought Reasoning for Advanced Image Generation.**                    09/2024–01/2025
*(Collaborator: Dr. Renrui Zhang, The Chinese University of Hong Kong)*
- Conducted research on applying Chain-of-Thought (CoT) reasoning to autoregressive image generation, focusing on test-time computation and Direct Preference Optimization (DPO).
- Proposed and implemented the Potential Assessment Reward Model (PARM), which adaptively evaluates each generation step by integrating existing reward models.
- Enhanced the Show-o model, achieving a +24% improvement on GenEval and surpassing Stable Diffusion 3 by +15%.
- **Progress:** Accepted by CVPR 2025.

**Data efficiency in reinforcement learning, Reinforcement learning on Hybrid SSM-Transformer model**
                    03/2025–present
*(Collaborator: Prof. Minjia Zhang, University of Illinois at Urbana-Champaign)*
- Different data have different learning efficiencies, and some data have no gradient contribution in the later stages of a long training cycle. New reinforcement learning methods are being developed based on this..
- **Progress:** Under study.

**Development and data analysis of resistive plate counter**                    05/2024–present
*(Supervisor: Prof. Qite Li, Peking University)*
- Detector Development.
- Developed and optimized signal processing algorithms to enhance the accuracy and precision of detector data analysis.
- Using reinforcement learning to replace traditional algorithms, reduce the signals required for particle determination, and increase detection efficiency and accuracy.
- **Progress:** Under study.

## PROFESSIONAL SKILLS

Programming and Software:        Python / MATLAB / Mathematica / CERN ROOT / LATEX

## EXPERIENCE

- **Shenzhen International Quantum Academy**                    Visiting Student

## HOBBIES

- **Anime**
- **Computer Games**