# Sze Wai Pang

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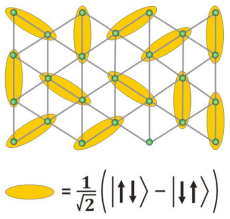


## Interests

- Physics, Mathematics, Numerical Weather Prediction (NWP), Data assimilation, Machine learning, Deep learning, Computational Fluid Dynamics (CFD)

## Education

2013 – 2020 **PhD in Physics**
**The Hong Kong University of Science and Technology (HKUST)**
Condensed matter physics

2010 – 2013 **Bachelor of Science in Physics**
**The Hong Kong University of Science and Technology (HKUST)**
Major: Physics and Mathematics

## Employment

1/2024 – Now **Principal Scientist.** ClusterTech Limited
- Take the lead in research and development on projects

7/2020 – 12/2023 **Senior Computational Scientist.** ClusterTech Limited
- Carry out the study of Numerical Weather Prediction (NWP) and Climate Change
- Analyse simulation results
- Collaborate with the academic sector and conduct research and development (R&D) for weather-related products/projects
- Support routine operations of forecasting systems as well as the underlying HPC/IT infrastructures

## Research Publications

### Journal Articles

1. W.-P. Sze, S.-C. Tang, C.-C. Cheung, and C.-Y. Tam, "Numerical weather prediction at 200 m local resolution based on an unstructured grid global model," *Earth and Space Science*, vol. 9, no. 10, e2022EA002342, 2022.
2. W. P. Sze, T. K. Ng, and K. T. Law, "Emerging ergodic behavior within many-body localized states," *arXiv preprint arXiv:2005.11812*, 2020.

### Conference Proceedings

1. Chi-Chiu Cheung, Ka-Ki Ng, Wai-Pang Sze and Jimmy Tat Chi Wong, "MPAS-A with Hierarchical Timestepping and Customized Mesh Generation: 2023 Updates," Joint WRF/MPAS Users' Workshop 2023, 20 – 23 June, 2023, 2023. URL: https://www2.mmm.ucar.edu/wrf/users/workshops/WS2023/presentations/day3/1_cheung.pdf.

2 C.-C. Cheung, C.-Y. Tam, W.-N. Leung, K.-K. Ng, and W.-P. Sze, "Applications of flexible spatial and temporal discretization techniques to a numerical weather prediction model," in *Proceedings of the Platform for Advanced Scientific Computing Conference*, ser. PASC '22, Basel, Switzerland: Association for Computing Machinery, 2022, ISBN: 9781450394109. DOI: 10.1145/3539781.3539790.

## Skills

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|---|---|
| Languages | English, Mandarin Chinese, Cantonese |
| Coding | Python, FORTRAN, Shell Script, C++, Matlab, NCL, LaTeX |
| Software | WRF, MPAS, JEDI-MPAS(DA), PALM, OpenFOAM, Conda/Micromamba, Spack, Singularity, SLURM. |
| Misc. | Academic research, teaching, training, consultation |

## Miscellaneous Experience

### Projects

2013 - 2020

**PhD project**
Supervisor: Prof. Tai Kai Ng (HKUST)
Project Title: Strongly correlation system and related numerical study
• A Many-Body Ergodic Phase between Two Classes of Many-Body Localized States and The Variational Study on Triangular XXZ Model

2016 - 2017

**Projective Symmetry Group (PSG) Project**
Collaborator: Prof. Zheng-Xin Liu (Department of Physics, Renmin University)
Project Title: Investigation of the classification problem of spin liquid state on XXZ triangular lattice
• In the previous work, I had finished the Variational Monte Carlo simulation about the spin-liquid type state. And then, Prof. Liu invited me to be a visitor and investigate the classification problem of spin liquid state on XXZ triangular lattice. The main idea comes from XG Wen's paper called Projective Symmetry Group(PSG). It is mainly theoretical work. Finally, we had done the classification analysis. (6/2016-8/2016 and 3/2017-4/2017)

3/2016 – 5/2016

**Variational Monte Carlo (VMC) Project**
Supervisor: Prof. Yi Zhou (Department of Physics, Zhejiang University)
Project Title: Optimization the trial wavefunction of spin liquid of 1D XXZ+DM spin model
• The project of spin liquid state by Variational Monte Carlo simulation. It is about the 1D XXZ+DM spin model and mainly focused on anisotropic spin spin interaction. Second, use *Tianhe-1* for simulation.

2012 - 2013

**Final Year Project**
Supervisor: Prof. Tai Kai Ng (HKUST)
Project Title: Superfluid-insulator transition
• The phase diagrams and phase transitions of Bosons with short-ranged repulsive interactions moving in periodic or random external potentials at zero temperature are investigated with emphasis on the superfluid-insulator transition induced by varying a parameter such as the density

## Miscellaneous Experience (continued)

2011 – 2012 **Undergraduate Research Opportunities Program (UROP)**
Supervisor: Prof. Kwok Yip SZETO (HKUST)
Project Title: Prisoner Dilemma Game on Complex Networks
• The prisoner dilemma game is generalized in two aspects in the multi-agent system framework. They are agents have memory and the interaction between agents are defined on a social network. My work focuses on Wheatstone Network and no memory

## References

Available on Request