

Meng, Zi Yang

Academic qualifications

University of Science and Technology of China	B.Sc. in Physics	2005
Universität Stuttgart, Germany	M.Sc. in Physics	2007
Universität Stuttgart, Germany	Ph.D. in Physics	2011

Previous academic positions

Professor	Institute of Physics, Chinese Academy of Sciences	2018.08 – 2019.02
Associate Professor	Institute of Physics, Chinese Academy of Sciences	2014.08 – 2018.07
Postdoctoral Fellow	University of Toronto	2013.08 – 2014.07
Postdoctoral Research Associate	Louisiana State University	2011.09 – 2013.07

Present academic position

Professor	Department of Physics, The University of Hong Kong	2023.10 -
Associate Professor	Department of Physics, The University of Hong Kong	2019.03 -2023.09

Research Interests & Expertise

Highly entangled quantum models and materials: quantum phase transitions, quantum magnetism, non-Fermi-liquid, quantum entanglement and 2D quantum moiré materials, Rydberg atom arrays.

Computational condensed matter physics: large-scale quantum Monte Carlo simulations, self-learning quantum Monte Carlo algorithms, Explainable-AI, tensor-network and neural-network

Honours and Awards

- 1). [2024 IOP Publishing Top Cited Paper Award for China.](#)
- 2). Editorial Board Member of [Reports on Progress in Physics in IOPSCIENCE.](#)
- 3). 2020/21 Tianhe Star Award for [“outstanding accomplishments and promotion of computational oriented research on the Tianhe supercomputers of China”.](#)
- 4). 2018 Highly Cited Research Article Award by Chinese Physics Society.
- 5). 2016 Mercator Fellow of the DFG research unit FOR1807 “*Advanced Computational Methods for Strongly Correlated Quantum Systems*”.
- 6). Citation ~ 8500 (google scholar), h-index 49, ~160 publications.
- 7). Referee for grants applications of Dutch Research Council, National Research Foundation of Singapore; Referee for promotion at Nanyang Technological University, Singapore; Supervisor of 10 PhD thesis.

Representative publications in recent five years

- 1). *Spectral evidence for Dirac spinons in a kagome lattice antiferromagnet*, Zhenyuan Zeng, Chengkang Zhou, Honglin Zhou, Lankun Han, Runze Chi, Kuo Li, Maiko Kofu, Kenji Nakajima, Yuan Wei, Wenliang Zhang, D. G. Mazzone, **Zi Yang Meng***(corresponding author), Shiliang Li*, [Nat. Phys. 20, 1097 \(2024\)](#)
- 2). *From Fractional Quantum Anomalous Hall Smectics to Polar Smectic Metals: Nontrivial Interplay Between Electronic Liquid Crystal Order and Topological Order in Correlated Topological Flat Bands*, Hongyu Lu, Han-Qing Wu, Bin-Bin Chen*, Kai Sun*, **Zi Yang Meng*(Corresponding author)**, [Rep. Prog. Phys. 87 108003 \(2024\).](#)

- 3). *Thermodynamic characteristic for correlated flat-band system with quantum anomalous Hall ground state*, Gaopei Pan, Xu Zhang, Hongyu Lu, Heqiu Li, Bin-Bin Chen, Kai Sun*, **Zi Yang Meng***, [Phys. Rev. Lett. 130, 016401 \(2023\)](#)
- 4). *Scaling of entanglement entropy at deconfined quantum criticality*, Jiarui Zhao, Yan-Cheng Wang, Zheng Yan, Meng Cheng*, **Zi Yang Meng***, [Phys. Rev. Lett. 128, 010601 \(2022\)](#)
- 5). *Triangular lattice quantum dimer model with variable dimer density*, Zheng Yan, Rhine Samajdar, Yan-Cheng Wang, Subir Sachdev, **Zi Yang Meng***, [Nature Communications 13, 5799 \(2022\)](#)

Five representative publications beyond recent five-year period

- 1). *Itinerant Quantum Critical Point with Fermion Pockets and Hot Spots*, Zi Hong Liu, Gaopei Pan, Xiao Yan Xu, Kai Sun, **Zi Yang Meng***, [Proc. Natl. Acad. Sci. U.S.A. 116 \(34\), 16760 \(2019\)](#)
- 2). *Dynamical Signature of Symmetry Fractionalization in Frustrated Magnets*, Guangyu Sun, Yan-Cheng Wang, Chen Fang, Yang Qi, Meng Cheng, **Zi Yang Meng***, [Phys. Rev. Lett. 121, 077201 \(2018\)](#)
- 3). *Nearly deconfined spinon excitations in the square-lattice spin-1/2 Heisenberg antiferromagnet*, Hui Shao*, Yan Qi Qin, **Sylvain Capponi**, Stefano Chesi, **Zi Yang Meng***, Anders W. Sandvik*, [Phys. Rev. X 7, 041072 \(2017\)](#)
- 4). *Duality between the deconfined quantum-critical point and the bosonic topological transition*, Yan Qi Qin, Yuan-Yao He, Yi-Zhuang You, Zhong-Yi Lu, Arnab Sen, Anders W. Sandvik, Cenke Xu, **Zi Yang Meng***, [Phys. Rev. X 7, 031052 \(2017\)](#)
- 5). *Non-Fermi-liquid at (2+1)d ferromagnetic quantum critical point*, Xiao Yan Xu, Kai Sun, Yoni Schattner, Erez Berg, **Zi Yang Meng***, [Phys. Rev. X 7, 031058 \(2017\)](#)

Research Grants

- 1). Project Coordinator (PC) of [Research Grants Council \(RGC\) of Hong Kong Collaborative Research Fund \(CRF\) Scheme](#)
Project No.: C7037-22GF
Project title: Many-body paradigm in quantum moiré material research
Funding year: 2023 – 2026 (on-going)
Amount: 5,964,800 HKD
- 2). Principle Investigator (PI) of [French National Research Agency \(Agence Nationale de la Recherche\) and the Research Grants Council \(RGC\) of Hong Kong Joint Research Scheme](#)
Project No.: A_HKU703/22
Project title: Automate: Advanced Numerical Methods for Highly Entangled Quantum Matter
Funding year: 2023 – 2027 (on-going)
Amount: 3,000,000 HKD
- 3). PI of Research Grants Council (RGC) of Hong Kong General Research Fund Scheme
Project No.: 17302223
Project title: The novel phases and numerical simulation of Rydberg arrays,
Funding year: 2024 - 2025 (to be started)
Amount: 428,794 HKD
- 4). PI of Research Grants Council (RGC) of Hong Kong General Research Fund Scheme
Project No.: 17309822
Project title: Quantum moiré materials and non-local measurements for quantum matter,
Funding year: 2023 - 2025 (on-going)
Amount: 783,000 HKD