Atsushi Ueda

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EDUCATION

04/2024 – (Postdoc)

Quantum Group, the university of Ghent under Prof. Frank Verstraete

04/2021 – Present (Oshikawa lab)

The University of Tokyo (Ph.D.), Department of Physics, School of Science

04/2019 – 03/2021 (Oshikawa lab)

The University of Tokyo (Master degree), Department of Physics, School of Science

"Numerical Study of Topological Phase Transition with Tensor Network Renormalization"

04/2015 – 03/2019

The University of Tokyo (Undergraduate), Department of Physics, School of Science

Laboratory rotation(04/2018 – 09/2018)

Machine learning using Quantum Computing (IBM Q) in Aihara Laboratory

Participating in the seminar about Quantum Information in Murao Laboratory

Internship project at MaxPlanck FKF(10/2018 – 03/2019)

Research on Ta_2NiSe_5, a candidate for the excitonic insulator

PUBLICATION

- "Resolving the Berezinskii-Kosterlitz-Thouless transition in the two-dimensional XY model with tensor-network-based level spectroscopy", **A. Ueda** and M. Oshikawa, Phys. Rev. B 104, 165132(2021) **Editor's suggestion**
- "Tensor network renormalization study on the crossover in classical Heisenberg and RP^2 models in two dimensions", **A. Ueda** and M. Oshikawa, Phys. Rev. E 106, 014104(2022)
- "Gapless symmetry-protected topological phase of quantum antiferromagnets on anisotropic triangular strip", Y Hidaka, S. C. Furuya, **A. Ueda**, and Y. Tada, Phys. Rev. B 106, 14436(2022)
- "Finite-size and finite bond dimension effects of tensor network renormalization", **A. Ueda** and M. Oshikawa, Phys. Rev. B 108, 024413(2023)
- "Fixed-point tensor is a four-point function", **A. Ueda** and M. Yamazaki, arXiv:2307.02523(2023)

Conference(Presentation)

- "Visualizing the Kosterlitz RG flow with tensor-network based level spectroscopy", Boundary and Bulk Criticality (2022)
- "RG Flow and Finite bond-dimension effect of Tensor Network Renormalization", JPS meeting(2021)
- "Hidden Criticality in 2D Dynamical quantum phase transitions", JPS meeting(2022)
- "Anatomy of 2D classical lattice models with TNR", Tensor Networks: Mathematical Structures and Novel Algorithms, ESI(2022) **(Invited)**
- "Accurate simulation using Tensor networks", Tensor Network 2023(CCS) **(Invited)**
- "RG flow and fixed-points in tensor network representation", MPI-UBC-UTokyo 2023 (Poster)
- "Tensor network and Renormalization group", JPS symposium on Tensor Networks(2024) **(Invited)**
- "Tensor networks and RG", Theoretical studies of topological phases of matter, CREST Tutorial Workshop (2024) **(Invited)**

Prize

Winner of the hackathon challenge by IQM on "Digital-analog variational eigensolver"(2022)

Fellowships

- MERIT-WINGS fellowship at the university of Tokyo
- JPSJ fellowship(DC1)