Nishan Ranabhat

Resume

Perimeter Institute Quantum Intelligent Lab
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in nishan-ranabhat

Education

2019–2024	**PhD in Theory and Numerical Simulation of Condensed Matter**, *SISSA*, Italy
2018–2019	**Postgraduate Diploma in Condensed Matter Physics**, *ICTP*, Italy
2015–2017	**Master of Science in Physics**, *University of Delhi*, India
2011–2014	**Bachelor of Science in Physics**, *Tri-Chandra Multiple Campus, Tribhuvan University*, Nepal

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Work Experience

5/24–present   **Mitacs Postdoctoral Fellow/ Algorithm Research Associate**, *University of Waterloo/ YiyaniQ Fintech*, Canada
- Collaborating with yiyaniQ fintech leveraging quantum inspired methodologies for portfolio optimization.
- Implemented variational neural annealing algorithm with multi-GPU parallelization for optimization of constrained portfolio Hamiltonians.
- Implemented automatic hyper-parameter tuning algorithm for optimizing penalty constraints in portfolio models.

1/24–4/24   **Research Fellow**, *SISSA*, Italy
- Studied the behavior of operator entanglement across thermal phase transition of long range spin models.

12/22–5/23   **Collaborator**, *Kernel Science SRL*, Italy
- Developed an exact diagonalization package that was integrated into the minimum viable product (MVP) of the software platform Aleph.

Skills

- **Programming languages:** Julia, Python, Mathematica, Fortran
- **Numerical techniques for Quantum many-body:** Tensor network methods, Exact diagonalization, Monte Carlo algorithms
- **Deep Learning:** PyTorch, Multi-GPU parallelization with Distributed Data Parallel (DDP) and NVIDIA Collective Communications Library (NCCL)

Publications

1. **N. Ranabhat**, M. Collura, *Dynamics of the order parameter statistics in the long-range Ising model*, SciPost Physics **12** (4), 126 (2022).
2. **N. Ranabhat**, M. Collura, *Thermalization of long-range Ising model*, SciPost Phys. Core **7**, 017 (2024).
3. M. Colura, G. Lami, **N. Ranabhat**, A.Santini, *Tensor Network Techniques for Quantum Computation*, SISSA Medialab S.r.l., (2024)
4. **N. Ranabhat**, A. Santini, E. Tirrito, M. Collura, *Dynamical deconfinement transition driven by density of excitation*, Phys. Rev. B **111**, 024304 (2025)