LIST OF PUBLICATIONS (most recent first) [Last updated: 2024, November 22]

- Real-Time Scattering in Ising Field Theory using Matrix Product States [1]
- Quantum computation of SU(2) lattice gauge theory with continuous variables [2]
- Sparsity dependence of Krylov state complexity in the SYK model [3]
- Thermal state preparation of the SYK model using a variational quantum algorithm [4]
- SU(2) principal chiral model with tensor renormalization group on a cubic lattice [5]
- Phase diagram of generalized XY model using tensor renormalization group [6]
- Hamiltonian simulation of minimal holographic sparsified SYK model [7]
- Tensor renormalization group study of 3D principal chiral model [8]
- Phase diagram of two-dimensional SU(N) super-YangMills theory with four supercharges [9]
- A model of quantum gravity on a noisy quantum computer [10]
- Continuous variable quantum computation of the O(3) model in 1+1 dimensions [11]
- Toward quantum computations of the O(3) model using qumodes [12]
- GPU-Acceleration of Tensor Renormalization with PyTorch using CUDA [13]
- Supersymmetric Wilson loops on the lattice in the large N limit [14]
- Notes on Quantum Computation and Information [15]
- Non-perturbative phase structure of the bosonic BMN matrix model [16]
- Thermal phase structure of dimensionally reduced super-Yang-Mills [17]
- Tensor renormalization of three-dimensional Potts model [18]
- Introduction to Monte Carlo for Matrix Models [19]
- Large-N limit of two-dimensional Yang-Mills theory with four supercharges [20]
- Tensor renormalization group study of the three-dimensional O(2) model [21]
- Three-dimensional super-Yang-Mills theory on the lattice and dual black branes [22]
- Positive Geometries for all Scalar Theories from Twisted Intersection Theory [23]
- Critical analysis of two-dimensional classical XY model [24]
- Finite N unitary matrix model [25]
- Thermal phase structure of a supersymmetric matrix model [26]
- Tensor renormalization group study of the non-Abelian Higgs model in two dimensions [27]
- Lattice quantum gravity with scalar fields [28]
- The properties of D1-branes from lattice super Yang-Mills theory using gauge/gravity duality [29]
- Removal of the trace mode in lattice N=4 super Yang-Mills theory [30]
- Truncation of lattice N = 4 super Yang-Mills [31]

- Nonperturbative study of dynamical SUSY breaking in $\mathcal{N}=(2,2)$ Yang-Mills theory [32]
- Testing the holographic principle using lattice simulations [33]
- Testing holography using lattice super-Yang-Mills theory on a 2-torus [34]

Bibliography

- [1] R. G. Jha, A. Milsted, D. Neuenfeld, J. Preskill, and P. Vieira, "Real-Time Scattering in Ising Field Theory using Matrix Product States," arXiv:2411.13645 [hep-th].
- [2] V. Ale, N. M. Bauer, R. G. Jha, F. Ringer, and G. Siopsis, "Quantum computation of SU(2) lattice gauge theory with continuous variables," arXiv:2410.14580 [hep-lat].
- [3] R. G. Jha and R. Roy, "Sparsity dependence of Krylov state complexity in the SYK model," arXiv:2407.20569 [hep-th].
- [4] J. Y. Araz, R. G. Jha, F. Ringer, and B. Sambasivam, "Thermal state preparation of the SYK model using a variational quantum algorithm," arXiv:2406.15545 [quant-ph].
- [5] S. Akiyama, R. G. Jha, and J. Unmuth-Yockey, "SU(2) principal chiral model with tensor renormalization group on a cubic lattice," *Phys. Rev. D* 110 no. 3, (2024) 034519, arXiv:2406.10081 [hep-lat].
- [6] A. Samlodia, V. Longia, R. G. Jha, and A. Joseph, "Phase diagram of generalized XY model using the tensor renormalization group," *Phys. Rev. D* 110 no. 3, (2024) 034504, arXiv:2404.17504 [hep-lat].
- [7] R. G. Jha, "Hamiltonian simulation of minimal holographic sparsified SYK model," arXiv:2404.14784 [quant-ph].
- [8] S. Akiyama, R. G. Jha, and J. Unmuth-Yockey, "Tensor renormalization group study of 3D principal chiral model," arXiv:2312.11649 [hep-lat].
- [9] N. S. Dhindsa, R. G. Jha, A. Joseph, and D. Schaich, "Phase diagram of two-dimensional SU(N) super-Yang-Mills theory with four supercharges," arXiv:2312.04980 [hep-lat].
- [10] M. Asaduzzaman, R. G. Jha, and B. Sambasivam, "Sachdev-Ye-Kitaev model on a noisy quantum computer," *Phys. Rev. D* 109 no. 10, (2024) 105002, arXiv:2311.17991 [quant-ph].
- [11] R. G. Jha, F. Ringer, G. Siopsis, and S. Thompson, "Continuous-variable quantum computation of the O(3) model in 1+1 dimensions," *Phys. Rev. A* 109 no. 5, (2024) 052412, arXiv:2310.12512 [quant-ph].
- [12] R. G. Jha, F. Ringer, G. Siopsis, and S. Thompson, "Quantum computations of the O(3) model using qumodes," PoS LATTICE2023 (2024) 230, arXiv:2308.06946 [hep-lat].
- [13] R. G. Jha and A. Samlodia, "GPU-acceleration of tensor renormalization with PyTorch using CUDA," *Comput. Phys. Commun.* **294** (2024) 108941, arXiv:2306.00358 [hep-lat].
- [14] R. G. Jha, "Supersymmetric wilson loops on the lattice in the large n limit," The European Physical Journal Special Topics (Jan, 2023). https://doi.org/10.1140/epjs/s11734-023-00768-x.
- [15] R. G. Jha, "Notes on Quantum Computation and Information," arXiv:2301.09679 [quant-ph].
- [16] N. S. Dhindsa, R. G. Jha, A. Joseph, A. Samlodia, and D. Schaich, "Non-perturbative phase structure of the bosonic BMN matrix model," *JHEP* 05 (2022) 169, arXiv:2201.08791 [hep-lat].
- [17] D. Schaich, R. G. Jha, and A. Joseph, "Thermal phase structure of dimensionally reduced super-Yang-Mills," PoS LATTICE2021 (2022) 187, arXiv:2201.03097 [hep-lat].
- [18] R. G. Jha, "Tensor renormalization of three-dimensional Potts model," arXiv:2201.01789 [hep-lat].
- [19] R. G. Jha, "Introduction to Monte Carlo for matrix models," SciPost Phys. Lect. Notes 46 (2022) 1, arXiv:2111.02410 [hep-th].
- [20] N. S. Dhindsa, R. G. Jha, A. Joseph, and D. Schaich, "Large-N limit of two-dimensional Yang-Mills theory with four supercharges," PoS LATTICE2021 (2022) 433, arXiv:2109.01001 [hep-lat].
- [21] J. Bloch, R. G. Jha, R. Lohmayer, and M. Meister, "Tensor renormalization group study of the three-dimensional O(2) model," *Phys. Rev. D* 104 no. 9, (2021) 094517, arXiv:2105.08066 [hep-lat].

- [22] S. Catterall, J. Giedt, R. G. Jha, D. Schaich, and T. Wiseman, "Three-dimensional super-Yang-Mills theory on the lattice and dual black branes," *Phys. Rev. D* 102 no. 10, (2020) 106009, arXiv:2010.00026 [hep-th].
- [23] N. Kalyanapuram and R. G. Jha, "Positive Geometries for all Scalar Theories from Twisted Intersection Theory," *Phys. Rev. Res.* 2 no. 3, (2020) 033119, arXiv:2006.15359 [hep-th].
- [24] R. G. Jha, "Critical analysis of two-dimensional classical XY model," J. Stat. Mech. 2008 (2020) 083203, arXiv:2004.06314 [hep-lat].
- [25] R. G. Jha, "Finite N unitary matrix model," arXiv:2003.00341 [hep-lat].
- [26] D. Schaich, R. G. Jha, and A. Joseph, "Thermal phase structure of a supersymmetric matrix model," *PoS* LATTICE2019 (2020) 069, arXiv:2003.01298 [hep-lat].
- [27] A. Bazavov, S. Catterall, R. G. Jha, and J. Unmuth-Yockey, "Tensor renormalization group study of the non-Abelian Higgs model in two dimensions," *Phys. Rev. D* **99** no. 11, (2019) 114507, arXiv:1901.11443 [hep-lat].
- [28] R. G. Jha, J. Laiho, and J. Unmuth-Yockey, "Lattice quantum gravity with scalar fields," *PoS* LATTICE2018 (2018) 043, arXiv:1810.09946 [hep-lat].
- [29] R. G. Jha, "The properties of D1-branes from lattice super Yang-Mills theory using gauge/gravity duality," PoS LATTICE2018 (2018) 308, arXiv:1809.00797 [hep-lat].
- [30] S. Catterall, J. Giedt, and R. G. Jha, "Removal of the trace mode in lattice N=4 super Yang-Mills theory," *Phys. Rev. D* **98** no. 9, (2018) 095017, arXiv:1808.04735 [hep-lat].
- [31] J. Giedt, S. Catterall, and R. G. Jha, "Truncation of lattice N=4 super Yang-Mills," *EPJ Web Conf.* 175 (2018) 11008.
- [32] S. Catterall, R. G. Jha, and A. Joseph, "Nonperturbative study of dynamical SUSY breaking in N=(2,2) Yang-Mills theory," *Phys. Rev. D* **97** no. 5, (2018) 054504, arXiv:1801.00012 [hep-lat].
- [33] R. G. Jha, S. Catterall, D. Schaich, and T. Wiseman, "Testing the holographic principle using lattice simulations," *EPJ Web Conf.* 175 (2018) 08004, arXiv:1710.06398 [hep-lat].
- [34] S. Catterall, R. G. Jha, D. Schaich, and T. Wiseman, "Testing holography using lattice super-Yang-Mills theory on a 2-torus," *Phys. Rev. D* 97 no. 8, (2018) 086020, arXiv:1709.07025 [hep-th].