

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



# Bibliography

- [1] 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 \[quant-ph\]](#).
- [2] S. Akiyama, R. G. Jha, and J. Unmuth-Yockey, “ $SU(2)$  principal chiral model with tensor renormalization group on a cubic lattice,” [arXiv:2406.10081 \[hep-lat\]](#).
- [3] R. G. Jha, “Hamiltonian simulation of minimal holographic sparsified SYK model,” [arXiv:2404.14784 \[quant-ph\]](#).
- [4] S. Akiyama, R. G. Jha, and J. Unmuth-Yockey, “Tensor renormalization group study of 3D principal chiral model,” [arXiv:2312.11649 \[hep-lat\]](#).
- [5] 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 \[hep-lat\]](#).
- [6] 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 \[quant-ph\]](#).
- [7] 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 \[quant-ph\]](#).
- [8] 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 \[hep-lat\]](#).
- [9] R. G. Jha and A. Samlodia, “GPU-acceleration of tensor renormalization with PyTorch using CUDA,” *Comput. Phys. Commun.* **294** (2024) 108941, [arXiv:2306.00358 \[hep-lat\]](#).
- [10] 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>.
- [11] R. G. Jha, “Notes on Quantum Computation and Information,” [arXiv:2301.09679 \[quant-ph\]](#).
- [12] 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 \[hep-lat\]](#).
- [13] D. Schaich, R. G. Jha, and A. Joseph, “Thermal phase structure of dimensionally reduced super-Yang–Mills,” *PoS LATTICE2021* (2022) 187, [arXiv:2201.03097 \[hep-lat\]](#).
- [14] R. G. Jha, “Tensor renormalization of three-dimensional Potts model,” [arXiv:2201.01789 \[hep-lat\]](#).
- [15] R. G. Jha, “Introduction to Monte Carlo for matrix models,” *SciPost Phys. Lect. Notes* **46** (2022) 1, [arXiv:2111.02410 \[hep-th\]](#).
- [16] 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 \[hep-lat\]](#).
- [17] 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 \[hep-lat\]](#).
- [18] 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 \[hep-th\]](#).
- [19] 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 \[hep-th\]](#).
- [20] R. G. Jha, “Critical analysis of two-dimensional classical XY model,” *J. Stat. Mech.* **2008** (2020) 083203, [arXiv:2004.06314 \[hep-lat\]](#).
- [21] R. G. Jha, “Finite  $N$  unitary matrix model,” [arXiv:2003.00341 \[hep-lat\]](#).
- [22] D. Schaich, R. G. Jha, and A. Joseph, “Thermal phase structure of a supersymmetric matrix model,” *PoS LATTICE2019* (2020) 069, [arXiv:2003.01298 \[hep-lat\]](#).



- [23] 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 \[hep-lat\]](#).
- [24] R. G. Jha, J. Laiho, and J. Unmuth-Yockey, “Lattice quantum gravity with scalar fields,” *PoS LATTICE2018* (2018) 043, [arXiv:1810.09946 \[hep-lat\]](#).
- [25] 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 \[hep-lat\]](#).
- [26] 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 \[hep-lat\]](#).
- [27] J. Giedt, S. Catterall, and R. G. Jha, “Truncation of lattice  $N = 4$  super Yang–Mills,” *EPJ Web Conf.* **175** (2018) 11008.
- [28] 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 \[hep-lat\]](#).
- [29] 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 \[hep-lat\]](#).
- [30] 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 \[hep-th\]](#).