

# Application of the tensor renormalization group method to non-Abelian lattice gauge theories

*Thursday, 5 December 2019 15:00 (3 hours)*

The tensor renormalization group method is a powerful tool to study lattice models, which works even with models that have sign problem. However, so far, its application to gauge theory has been restricted to the  $U(1)$  and  $SU(2)$  cases. In this work, we apply it to two-dimensional  $U(N)$  gauge theories which are exactly solvable. We are able to extract the large- $N$  behaviors of the model such as the Eguchi-Kawai reduction and the Gross-Witten phase transition. We also study the model with a theta-term, which has the sign problem, and reproduce exact results.

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