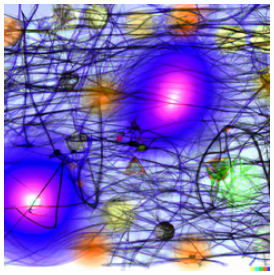

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Entanglement entropy from non-equilibrium lattice simulations

Friday, 12 May 2023 16:30 (20 minutes)

The entanglement entropy is a quantity encoding important features of strongly interacting quantum many-body systems and gauge theories, but its analytical study is still limited to systems with high level of symmetry. This motivates the search for efficient techniques to investigate this quantity numerically, by means of Monte Carlo calculations on the lattice. In this talk, we present a lattice determination of the entropic c-function using a novel algorithm based on Jarzynski's equality: an exact theorem from nonequilibrium statistical mechanics. After presenting benchmark results for the Ising model in two dimensions, where our algorithm successfully reproduces the analytical predictions from conformal field theory, we discuss its generalization to the three dimensional Ising model, for which we were able to extract universal terms beyond the area law. Finally we comment on future applications to gauge theories.

Primary authors: BULGARELLI, Andrea (University of Turin and INFN Turin); MARCO, Panero (University of Turin and INFN Turin)

Presenter: BULGARELLI, Andrea (University of Turin and INFN Turin)