The continuum limit of a quantum circuit : variational classes for quantum fields

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In recent years we've seen many developments in the study of strongly correlated quantum systems spurred by insights from the study of entanglement in quantum information theory. In particular, new variational classes manifestly exploiting the entropy/area law have been applied to successfully study a wide range of settings from real-time evolution to finite fermion densities. These developments have been mostly centered in the lattice setting. In this talk I'll describe recent work in generalizing the two most successful variational classes developed, matrix product states and the multiscale entanglement renormalization ansatz, to the quantum field setting by exploiting a continuum limit of their quantum circuit descriptions.

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