

Information theoretic measures and phase transitions in spin chains

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Variational wavefunctions based on the Matrix Product State ansatz have been used in physics for a long time, and became widely used in computational simulations with the advent of the Density Matrix Renormalization Group. In recent years, concepts from quantum information theory have had a dramatic effect on the field, both for new algorithms and approaches as well as refining techniques in more established domains. This talk will illustrate some of the impacts of quantum information theory on the Density Matrix Renormalization Group, focussing on entanglement and correlations as a probe of quantum phase transitions.