

Abstract for an Invited Paper  
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**On the link between quantum information theory and DMRG**

JOSE GAITE, Instituto de Matematicas y Fisica Fundamental, C/Serrano 113 bis, Madrid 28006, Spain

The density matrix renormalization group can be formulated as a method that sequentially splits some quantum system into two subsystems and chooses the reduced Hilbert spaces for the subsystems such that the entropy of bipartite entanglement is maximized. This method is optimal for removing the negative effect of a boundary in the performance of real space renormalization groups. An analysis of the growth of bipartite entanglement with system sizes allows one to assess from a quantum information point of view the growth of resources needed to maintain a certain quality of approximation. There emerge interesting links to the geometric entropy of field theories and to quantum information methods for black holes.