

Abstract Submitted  
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**Entanglement and Quantum Phase Transition in Low Dimensional Spin Systems** YAN CHEN, Department of Physics, The University of Hong Kong, PAOLO ZANARDI, ISI, Torino, Italy, ZIDAN WANG, Department of Physics, The University of Hong Kong, FUCHUN ZHANG, Department of Physics, The University of Hong Kong — Entanglement of the ground states in  $XXZ$  and dimerized Heisenberg spin chains and in two-leg spin ladder is analyzed by using spin-spin concurrence and the entanglement entropy between a selected block of spins and the rest of the system. Quantum critical points as well as phase boundaries can be in some cases identified straightforwardly by analyzing the local extreme of the entanglement. We show that various subsystem partitions may provide complementary description of a quantum phase diagram.

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