Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Entanglement Entropy of zig-zag spin chains with Ring Exchange

JON SPALDING, California State University, Northridge — In the study of interacting quantum spin chains, the ground state wavefunction carries information about the phases of matter that occur for different interaction parameters. In this case, a spin-1/2 chain with 3 interaction terms in the Hamiltonian–nearest neighbor, next nearest neighbor, and ring exchange, is investigated using entanglement entropy to map out a ground state phase diagram. In addition, further information can be obtained from the entanglement spectrum. Finally, preliminary investigations of the effects of an impurity on this triangular Heisenberg ladder are reported.

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Date submitted: 09 Nov 2012   Electronic form version 1.4