Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Entanglement at an O(3) Critical Point with a Numerical Linked-Cluster Expansion ANN B. KALLIN, University of Waterloo, RAJIV SINGH, University of California Davis, MILES STOUDENMIRE, A. JOHN BERLINSKY, Perimeter Institute for Theoretical Physics, ROGER MELKO, University of Waterloo, Perimeter Institute for Theoretical Physics — Using the Numerical Linked-Cluster Expansion technique on rectangular clusters, we study the scaling of Renyi entanglement entropies at an O(3) quantum critical point, realized through the spin-1/2 Heisenberg bi-layer. There is a subleading logarithmic contribution to the entanglement due to the presence of a vertex in the entanglement boundary, with a coefficient that is known to be universal. We compute this "corner coefficient" and compare our value to that from both a non-interacting field theory, and the Ising fixed point in 2+1 dimensions. The corner coefficient has the potential to distinguish between these and other universality classes, through a variety of numerical calculations of strongly interacting quantum critical points.

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Date submitted: 15 Nov 2013 Electronic form version 1.4