

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Entanglement Entropy in the Two-Dimensional Random Transverse Field Ising Model**<sup>1</sup> STEPHAN HAAS, Department of Physics and Astronomy, University of Southern California, RONG YU, Department of Physics and Astronomy, University of Southern California and Department of Physics, University of Tennessee, HUBERT SALEUR, Service de Physique Theorique, CEN Saclay, Gif Sur Yvette, F-91191, France — We have applied the numerical strong disordered renormalization group method to the two-dimensional random transverse field Ising model, and studied the scaling behavior of the entanglement entropy. The leading term of the entanglement entropy scales linearly with the block size, following the so called *area law*. However, besides this *area law* contribution, a subleading logarithmic correction at the quantum critical point is resolved. This correction is understood from the point of view of an underlying percolation transition, both at finite and at zero temperature.

<sup>1</sup>This work was supported by DOE, Grant No. DE-FG02-05ER46240. Computational facilities have been generously provided by the HPCC-USC Center.

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Date submitted: 27 Nov 2007

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