

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Diameter of Random Clusters in Potts Models** D. W. BLAIR, JON MACHTA, University of Massachusetts at Amherst — We report measurements of cluster diameter – the maximum over all pairs of connected vertices of the minimum path length between the vertices – in numerical simulations of random clusters in  $q$ -state Potts models in two and three dimensions. Although the diameter is not a thermodynamic quantity, it is expected to display critical behavior for Potts models as the size of the largest cluster diverges at the critical point. We have developed an efficient algorithm for measuring the diameter, and have obtained results using the Swendsen-Wang algorithm both for equilibrating the model and for identifying clusters.

Donald Blair  
University of Massachusetts at Amherst

Date submitted: 20 Nov 2006

Electronic form version 1.4