Abstract Submitted
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Minimal spanning trees at the percolation threshold: a numerical calculation[1] SEAN SWEENEY, A. ALAN MIDDLETON, Syracuse University — Through computer simulations on a hypercubic lattice, we grow minimal spanning trees (MSTs) in up to five dimensions and examine their fractal dimensions. Understanding MSTs is imporant for studying systems with quenched disorder such as spin glasses. We implement a combination of Prim's and Kruskal's algorithms for finding MSTs in order to reduce memory usage and allow for simulation of larger systems than would otherwise be possible. These fractal objects are analyzed in an attempt to numerically verify predictions of the perturbation expansion developed by T. S. Jackson and N. Read for the pathlength fractal dimension d_s of MSTs on percolation clusters at criticality [T. S. Jackson and N. Read, Phys. Rev. E **81**, 021131 (2010)]. Examining these trees also sparked the development of an analysis technique for dealing with correlated data that could be easily generalized to other systems and should be a robust method for analyzing a wide array of randomly generated fractal structures.

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