

Abstract Submitted
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The Phase Transitions of Self-similar Small-world Networks¹

TRENT BRUNSON, STEFAN BOETTCHER, Emory University — A novel set of self-similar networks called Hanoi networks² (HN) have been developed to study the critical phenomena of small-world networks using the renormalization group (RG). Physically, HNs contain a more desirable geometry than random small-world networks. Their structure consists of a one-dimensional backbone with a hierarchy of long-range bonds, which allows the flexibility of studying planar and non-planar networks with either a regular or exponential degree distribution. The RG and Ising model simulation results for HNs reveal unique phase transitions and non-universal behavior, which can be attributed to their hierarchical structure.³

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²S. Boettcher, B Gonçalves, Europhysics Letters **84**, 30002 (2008).

³See also <http://www.physics.emory.edu/faculty/boettcher/>.

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