

Abstract Submitted  
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**Renormalization group fixed point analysis on small-world Hanoi networks**<sup>1</sup> TRENT BRUNSON, STEFAN BOETTCHER, Emory University — The Hanoi networks (HN) are a class of small-world hierarchical networks with varying degree distributions. Because of their unique self-similar structure, the renormalization group (RG) can be solved exactly on these networks.<sup>2</sup> The real-space RG framework is used to study the Ising model phase diagrams on HNs and to interpolate between different types of networks using a tunable parameter in the recursion equations. This interpolation between different HNs reveals tunable transitions and critical behavior including the inverted Berezinskii-Kosterlitz-Thouless transition. The fixed point analysis of the RG in HNs explains the behavior of the divergence of the correlation length at critical temperatures as well as other critical phenomena observables.<sup>3,4</sup>

<sup>1</sup>With support from the NSF through grant DMR-0812204.

<sup>2</sup>S. Boettcher, C.T. Brunson, <http://arxiv.org/abs/1011.1603>

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

<sup>4</sup>See also <http://www.physics.emory.edu/students/tbrunson/>.

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