

Abstract Submitted
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Connectivity and Cost Trade-offs in Multihop Wireless Networks¹ MAY LIM, New England Complex Systems Institute and Brandeis University, DAN BRAHA, New England Complex Systems Institute and University of Massachusetts Dartmouth, SANITH WIJESINGHE, New England Complex Systems Institute, STEPHENSON TUCKER, Sandia National Laboratory, YANEER BAR-YAM, New England Complex Systems Institute — Ad-hoc wireless networks are of increasing importance in communication and are frequently constrained by energy use. Here we propose a distributed, non-hierarchical adaptive method using preferential detachment for adjusting node transmission power to reduce overall power consumption without violating network load limitations. We derive a cost and path length trade-off diagram that establishes the bounds of effectiveness of the adaptive strategy and compare it with uniform node transmission strategy for several node topologies. We achieve cost savings as high as 90% for specific topologies.

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