

# Recent Theoretical and Experimental Results in Multiuser Zero Forcing Relaying

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## **Abstract**

We consider a wireless ad hoc network with single antenna nodes under a two-hop relay traffic pattern. Some of the nodes in the network form source/destination pairs, while the other nodes serve as amplify and forward relays. The relay gains are assigned such, that the interference between different source/destination links is nulled (multiuser zero forcing relaying; MU-ZFR). This essentially realizes a distributed spatial multiplexing gain with single antenna nodes. We present an analysis of MU-ZFR with noisy channel state information and local oscillator phase noise, discuss the asymptotic performance in dense wireless networks and present experimental results, which are based on vector channel measurements in an indoor office environment.