Rotationally Invariant Coded Modulation for Physical Layer Network Coding in Two-Way Relay Fading Channel

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Abstract:
This paper investigates a novel coded modulation scheme for Physical Layer Network Coding (PLNC) in the Two-Way Relay (TWR) fading channel. Using a fully-adaptive adaptive soft demodulator and Independent Decoding Levels, the proposed scheme can eliminate the effect of fading on the TWR Channel. To reduce system complexity at the relay, we also provide a low-complexity scheme with a series of fixed demodulators. Based on maximizing the mutual information between received signal and network coded symbol, the adaptive selection of the demodulators is optimized. The proposed simplified scheme exhibits advantages in terms of flexibility, complexity and performance.