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Sommario/riassunto	<p>Long description: In this thesis, several important aspects of cooperative wireless multiuser networks are investigated. The focus lies on coherent two-hop relaying networks where several amplify-and-forward (AF) relays assist the communication between multiple source-destination pairs. First, the impact of local oscillator (LO) imperfections and I/Q imbalance at the relays on two-hop relaying is investigated. A special focus lies on the comparison between frequency division duplexing (FDD) and time division duplexing (TDD) relays. Based on the observation that the direction in which a channel between two wireless nodes is measured has an impact on the estimate, phase synchronization requirements for coherent relaying networks are then found. Several channel estimation protocols that differ in the direction in which the single-hop channels are measured are furthermore identified and their performance is compared. Next, a very simple phase synchronization scheme is presented that provides a set of relays with a common LO phase. Two coherent beamforming schemes, namely multiuser zero-forcing (MUZF) and multiuser minimum mean squared error (MMSE) relaying, are then investigated. Finally, a real-world demonstrator for distributed wireless communication networks (called RACooN Lab) is presented. It was used to implement coherent cooperative communication schemes on a practical two-hop relaying</p>

network.
