

# Distributed Space-Time Coding Based on the Self-Coding of RLI for Full-Duplex, Two-Way Relay Cooperative Networks

Abstract:

In this paper, we consider full-duplex (FD), twoway relay cooperative networks, which allow the relaying of communications in both directions simultaneously and over the same frequency band. We propose a self-coded distributed spacetime coding (SC-DSTC) scheme, in which the relay node performs a self-convolutional encoding and forms a distributed linear convolutional space-time code (DLC-STC) together with the direct link. The self-convolutional code at the relay is realized by using the stronger part of residual loop interference (RLI). The encoding process is implemented for both directions simultaneously through the local loop channel by a single amplifying factor, which is optimized when the loop channel information is imperfect. The simulation results show that the proposed SCDSTC scheme can achieve asynchronous full cooperative diversity and is robust to the loop channel state information error at the relay when it is dominant among the interference and noise.