Abstract

In recent years, the demand for new-generation wireless networks has spurred research on cooperative communication, a powerful physical layer technique to combat fading in wireless relaying scenario. Recently, chaos based communication has been proved to exhibit excellent features which suits better for the emerging wireless networks. Different chaos based modulation schemes has been analyzed with the recent literatures, of which the code shifted differential chaos shift keying (CS-DCSK) and Quadrature chaos shift keying (QCSK) schemes are proved to be the better schemes. By combining the advantage of aforementioned CS-DCSK and QCSK scheme, a novel modulation scheme called code shifted Quadrature chaos shift keying (CS-QCSK) is reported in our earlier work [21] and its suitability in a cooperative relaying scenario with a single relay node is tested in this paper. The novel CS-QCSK scheme is implemented in the nodes of the cooperative relaying system to upgrade the system performance. The simulation results have validated the effectiveness of the proposed scheme by offering better BER performance, minimum outage probability and increased spectral efficiency compared to the non-cooperative transmission method.
A Novel Chaotic Modulation Scheme in a Cooperative Relaying System


Index Terms

Computer Science Wireless Communications

Keywords

Cooperative communication Chaotic modulation Code shifted Quadrature chaos
shift keying (CS-QCSK) Decode
and Forward (DF) protocol

Bit error rate (BER)
outage probability
spectral efficiency