Ph: 9585554590, 9585554599
Email: support@salemsmartreach.com
URL: www.salemsmartreach.com

Bounded Delay-Tolerant Space-Time Codes For Distributed Antenna Systems

Abstract:

Distributed space-time codes (STC) can achieve cooperative diversity in distributed antenna systems. But path delay difference may cause diversity loss. In this paper, a family of asynchronous STC is proposed to achieve full diversity, given that the path delay difference is within a tolerance bound. The proposed code structure allows the overall decoding process to be decomposed into several independent sub-processes, which can be tackled by low-complexity maximum-likelihood decoders. Two code designs based on the Alamouti code and the Golden code are given for a system with two distributed antennas. Moreover, two designs based on orthogonal STC and fast group decodable STC are introduced for a system with four distributed antennas, with each transmitter having two antennas. Full diversity gain is proved for all code designs and their associated decoding complexities are analyzed. Simulations of the proposed codes confirm our theoretical results on full diversity gain.