

A Comparison of Transmission Schemes for Scalable Video over MIMO Relay Networks

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Abstract—This paper investigates a comparison of transmission schemes for the scalable video over multiple-input multiple-output relay networks. We consider three time-division multiple-access cooperative schemes by using embedded space time codes with various degrees of broadcasting and receiving collision. In this paper, we assume that base station and relay station are equipped two antennas and mobile stations have only one antenna. The relay station operates decode-and-forward mode for cooperative transmission. The base station broadcasts scalable video bit stream by encoding embedded space time codes with the assistance of relay. Upon the amount of received information of each cooperative scheme, Mobile stations get the corresponding efficient decoding. With the help of relayed information, base layer retrieves better protection for ensuring the basic quality of scalable video. Visual quality is refined by enhancement layers carried in transmitted signal. We investigate the diversity performance of various schemes in term of bit error rate. Scalable video performance is also provided for comparing and evaluating the effectiveness of scalable video transmission schemes. Based on the need of users, it's possible to select the suitable scheme for trading off between the protection of base and enhancement layers.

Keyword— Fading relay channels, scalable video coding, space-time coding, broadcast channel.



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