

Performance Evaluation of Precoded-STBC over Rayleigh Fading Channel using BPSK & QPSK Modulation Schemes

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Abstract— Alamouti code is a simple space-time code that can be used for transmit diversity systems. This is a class of easily decoded space-time codes that achieve full diversity order in Rayleigh fading channels. Alamouti exist only for certain numbers of transmit antennas and do not provide array gain like diversity techniques that exploit transmit channel information. When channel state information (CSI) is available at the transmitter, though, precoding the space-time codeword can be used to support different numbers of transmit antennas. The proposed work in this paper involves a transmitted signal consists of a precode followed by Alamouti code. A new design criterion and a corresponding design method of precoders are proposed which shows comparison of bit error rate (BER) performance of Alamouti STBC and Precoded Alamouti in Zero Forcing and MMSE equalization techniques. The Rayleigh fading channel is used as modulation channel.

Keywords – Alamouti, BER, CSI, MMSE Precoding, Rayleigh fading, STBC, Zero Forcing.