Bit Error Rate Analysis for V-BLAST/STBC using Interference Cancellation Techniques

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Abstract— **Multiple Input Multiple Output (MIMO) systems have been extensively studied in context of wireless communication systems, which promising the both increased capacity and link level reliability. In this paper, we proposed the interference cancellation techniques for V-BLAST/STBC architecture, which integrates Alamouti space-time block code (STBC) layer together with vertical Bell-laboratories (V-BLAST) layer. In this work, we employ four transmit and three receive antennas over frequency flat Rayleigh fading channel. This paper presents signal detectors for V-BLAST/STBC with minimum mean square error (MMSE), zero forcing (ZF), parallel interference cancellation (PIC) and successive interference cancellation–zero forcing with binary phase shift keying (BPSK). Simulation results show the bit error rate performance degradation and the computational complexity of the joint optimal detection is better than the other detection technique.**

***Keyword*— interference cancellation; Vertical Bell Laboratories Layered Space-Time; Space Time Block Code; zero forcing; minimum mean square error; successive interference cancellation; parallel interference cancellation**

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