

## Performance Comparison of Space-Time Block and Trellis Codes under Rayleigh Channels

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**Abstract :** Due to the crowded orbits and shortage of frequency resources, utilizing of MIMO technology to improve spectrum efficiency and increase the capacity has become a necessary trend of broadband satellite communication. We analyze the main influenced factors and compare the BER performance of space-time block code (STBC) scheme and space-time trellis code (STTC) scheme. This paper emphatically studies the bit error rate (BER) performance of STTC and STBC under Rayleigh channel. The main emphasis is placed on the effects of the factors, such as terminal environment and elevation angles, on the BER performance of STBC and STTC schemes. Simulation results indicate that performance of STTC under Rayleigh channel is obviously improved with the increasing of transmitting and receiving antennas numbers, but the encoder state has little impact on the performance. Under Rayleigh channel, performance of Alamouti code is better than that of STTC.

**Keywords :** MIMO, space time block code (STBC), space time trellis code (STTC), Rayleigh channel

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