

PERFORMANCE EVALUATION OF SPACE-TIME TRELLIS CODE

S. D. BHAD, A. S. HIWALE AND A. A. GHATOL

Abstract

Multiple-Antenna systems are expected to become popular as a solution to enhance data throughput and quality of communication in complex propagation environment and will be adopted in many of the wireless and mobile communication systems in the future. MIMO provides theoretically increased spectral efficiency and hence Space-Time codes have been developed to practically achieve high data rates in MIMO wireless communication systems. Trellis-code modulation (TCM) is one of the coded modulation techniques used in digital communications. It combines the choice of a modulation scheme with that of a convolutional code together for the purpose of gaining noise immunity over encoded transmission without expanding the signal bandwidth or increasing the transmitted power. Improved design criteria for space-time trellis codes in fading channel are introduced and utilized. This paper discusses the capacity and error performance Analysis of space-time Trellis codes in quasi-static flat Rayleigh fading channels.

Keywords: MIMO, Space-Time Trellis Codes (STTC), Rayleigh fading channels, pair wise-error probability, channel capacity