

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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APPLICATION OF ADAPTIVE CODING MODULATION IN HIGH-SPEED SATELLITE
COMMUNICATION

Abstract

At present, fixed coding and low-order modulation mode have been used in most satellite communication systems. Satellite communication link has a great link margin at most of service time, especially in Ka-band satellite systems. This largely limits the transmission rate of satellite communication. Adaptive coding modulation (ACM) can change the coding and modulation mode adaptively based on signal-to-noise ratio, it can automatically converts link margin to link transmission capacity, so as to greatly improve the spectrum efficiency of wireless channel. In high-speed satellite communication, the transmission efficiency and data throughput can be improved by using ACM, which can also effectively resist rain-fading. In this paper, we study ACM control mechanism and coding modulation scheme according to the characteristics of high-rate satellite communication, and propose an ACM mode suitable for high-speed satellite communication. Experiment results show that transmission efficiency is increased by 0.5 times when using ACM in high-speed satellite communication compared to fixed coding modulation mode.