SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2) Poster Session (P)

Author: Mr. Wang Hongfeng Shijiazhuang mechanical engineering college, China, wanghongfeng@hotmail.com

COMPENSATION STATEGY FOR RAIN ATTENUATION IN KA BAND SATELLITE COMMUNICATION

Abstract

The performance of ka band satellite communication sysytem is vulnerable to tropospheric propagation impairment, namely rain attenuation, scintillation and depolarization. According to engineering experience, rain attenuation is the dominant factor. Rain attenuation degrades the space-ground channel by reducing the received power of communication signals, and thus decrease the SNR of receiver and lead to BER degradation. Traditional rain compensation methods usually establish the model of rain rate firstly and need long-term statistics data to fulfill rain compensation. A data fusion method is presented for a kind of satellite communication system with single station telemetering function. It integrates the variation of ground tracking signal amplitute/AGC voltage, telemetering signal amplitute/AGC voltage and the electric current of TWTA on satellite to determine the compensation power value and thus adjust the up-link compensating power in time. This method is used in a kind of ka band satellite communication sytem successfully and the compesation result is detailed.