

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Near-Earth and Interplanetary Communications (2)

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A DEEP SPACE COMMUNICATION LINK BUDGET METHOD BASED ON CCSDS STANDARDS

Abstract

Considering that the shortage of link budget margin in deep space communication, a new link budget method based on CCSDS standards is put forward. According to this method, the deep space TTC link is divided into the carrier channel, data channel and ranging channel. and each channel's budget process is elaborated; meanwhile, this method gives the design methods of the main parameters of the ground station, the detector, and the channel, focuses on the analysis of the modulation index optimization, simulates the computational model of some parameters such as the atmospheric absorption loss, rainfall loss, these parameters have a very high reference and practical value for deep space TTC link design. Finally, combined with the actual parameter, the CE-2's link margin is analyzed and the validity of the proposed method is verified.