

Prediction Method for Channel Quality Indicator in LEO mobile Satellite Communications

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Abstract—CQI(Channel Quality Indicator) is an essential indicator for AMC(Adaptive Modulation and Coding) technique in terrestrial mobile system. Due to the long delay, and fast movement of LEO satellite, CQI prediction is necessary to ensure effective AMC in LEO mobile satellite communication system. The complete procedure and problem encountered when doing AMC in satellite system are introduced and the difficulties of prediction are analyzed. In order to obtain meaningful and feasible CQI prediction results, a complete prediction scheme is proposed. For different evaluation angles and different UE speeds, Hallen's long-range prediction model and a modified smooth-ARIMA (Autoregressive Integrated Moving Average) are chosen to be applied in this scheme. Simulation results show that the prediction performance is very well with the proposed method, which can surely guarantee AMC performance.

Keyword—AMC, CQI Prediction, Low earth orbit satellites, Long Range Prediction



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