

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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A CARRIER PHASE SYNCHRONIZATION ALGORITHM IN SATELLITE COMMUNICATION
SYSTEM

Abstract

Aiming at the shortcomings of the low spectrum efficiency of the classical pilot symbol assisted phase synchronization methods in satellite communication system, an iterative carrier phase synchronization algorithm is proposed, which introduces EM algorithm on the base of BP algorithm and makes use of the posterior probabilities of the data symbols provided by the iterative decoder and gets good estimate of carrier phase by iteratively exchanging information between the synchronizer and the decoder. With the increasing iterative numbers, the value of phase estimation is more and more accurate because the information provided by the decoder is more and more accurate. The proposed algorithm is applied in the system of LDPC based BICM. Simulation results show the proposed method is effective and has better performance in certain range of phase offset, compared with the classical methods. With the increasing SNR(Signal Noise Ratio), it approaches the performance of ideal synchronization faster.