Direct Blind Adaptive Signal Reception In Ultra-Wideband Communication System Employing Time-Hopping PAM.

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ABSTRACT

This paper deals with the design of blind (without exploiting training sequences and undesired users' time-hopping (TH) code) adaptive mobile receiver in ultra wideband(UWB) communication system. We first derive the batch mode constrained minimum-output-energy (MOE) receiver. Furthermore, a blind channel estimator is deduced by choosing appropriate constraints to ensure no desired signal cancellation. To reduce the computation load, we propose a blind adaptive channel estimator, which is designed to meet the criterion of maximizing the minimum possible MOE receiver's output energy. The estimated channel parameters are employed to determine the weight vector at the mobile station (MS) receiver. The proposed algorithm are based on Minimum Power Distortionlessly Response(MPDR) and Linear Constraints Minimum Power(LCMP) as well as gradient search adaptation rule. Simulation results demonstrate that the performance of the proposed blind adaptive mobile receiver converge to the optimum batch-mode MOE receiver. Moreover, the algorithm are verified to be robust to near-far problem.

Keywords : ultra wideband (UWB) ; time-hopping (TH) ; minimum-output-energy (MOE) ; blind ; adaptive ; Minimum Power Distortionlessly Response(MPDR) ; Linear Constraints Minimum Power(LCMP)

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