Design of Blind Reduced-Rank Adaptive Mobile Receiver for UWB System Over Multipath Fading Channel

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ABSTRACT

This paper deals with the design of blind (without exploiting training sequences and undesired users ’ TH codes) reduced-rank adaptive mobile receiver applying in ultrawideband (UWB) communication system. We first employ constrained optimization technique to design a batch-mode blind mobile receiver. To reduce the computational complexity and reflect the dense arrivals of multipath component (MPC) in indoor channel, we propose a Generalized Sidelobe Canceller (GSC) based blind adaptive receiver. The algorithm jointly and iteratively optimizes the weight vector and channel impulse response (IR) to improve system performance. Simulation results show that the proposed adaptive receiver converges to the optimum batch mode receiver. Moreover, the algorithms are shown to be robust to multi-user interference (MUI) and near-far problems.

Keywords : Multi-user interference ; Minimum-output-energy ; Ultra wideband ; Generalized Sidelobe Canceller

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