Grover’s QSA based MC-CDMA Detector

Abstract

Multi-Carrier Code Division Multiple Access (MC-CDMA) is considered as one of the major techniques used in 4G broadband wireless services. It combines the advantages of the OFDM systems, of robustness to the multi path effects, and the advantages of CDMA systems, which are high privacy and security. However, a problem appears in the detection of transmitted information because of the effect of noise, fading and other multipath effects. In this paper, Grover’s quantum search algorithm based MC-CDMA detector is proposed as a solution for this problem. Grover’s quantum search algorithm is based on the concepts of quantum computing, such as quantum bit, quantum register and quantum parallelism. The performance of the proposed detector was realized and compared with previous works. The simulation results showed the superiority of the proposed detector in BER performance. The performance of the proposed detector showed that it is very close to the optimum.

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