

## **Variable Tree Structure QR Decomposition-M Algorithm (QRD-M) in Multiple Input Multiple Output-Orthogonal Frequency Division Multiplexing (MIMO-OFDM) Systems**

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**Abstract :** In multiple input multiple output-orthogonal frequency division multiplexing (MIMO-OFDM) systems, QR decomposition-M algorithm (QRD-M) has suboptimal error performance. However, the QRD-M has still high complexity due to many calculations at each layer in tree structure. To reduce the complexity of the QRD-M, proposed QRD-M modifies existing tree structure by eliminating unnecessary candidates at almost whole layers. The method of the elimination is discarding the candidates which have accumulated squared Euclidean distances larger than calculated threshold. The simulation results show that the proposed QRD-M has same bit error rate (BER) performance with lower complexity than the conventional QRD-M.

**Keywords :** complexity, MIMO-OFDM, QRD-M, squared Euclidean distance

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