

## A Robust Frequency Offset Estimator for Orthogonal Frequency Division Multiplexing

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**Abstract :** We address the integer frequency offset (IFO) estimation under the influence of the timing offset (TO) in orthogonal frequency division multiplexing (OFDM) systems. Incorporating the IFO and TO into the symbol set used to represent the received OFDM symbol, we investigate the influence of the TO on the IFO, and then, propose a combining method between two consecutive OFDM correlations, reducing the influence. The proposed scheme has almost the same complexity as that of the conventional schemes, whereas it does not need the TO knowledge contrary to the conventional schemes. From numerical results it is confirmed that the proposed scheme is insensitive to the TO, consequently, yielding an improvement of the IFO estimation performance over the conventional schemes when the TO exists.

**Keywords :** estimation, integer frequency offset, OFDM, timing offset

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