# MITIGATION OF THE HIGH PAPR OPTICAL OFDM SYSTEM USING POSITION PERMUTATION

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**Abstract**

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**(Established under Sri Balaji Educational Society, Ananthapuramu)**

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**Abstract**

Efficient use of the spectrum, increased resilience to inter-symbol interference (ISI) and simpler channel equalization are increasingly becoming important considerations in the design of communication systems. In this regard, orthogonal frequency division multiplexing (OFDM) has become a preferred modulation technique in wireless communication systems. However, one of its notorious challenges is the high peak-to-average power ratio (PAPR). Symbol position permutation (SPP) is a distortion less technique for PAPR reduction that achieves substantial PAPR reduction without bit error rate (BER) degradation. However, the existing works focus on using SPP for PAPR reduction in radio frequency (RF) OFDM and the use of this technique for PAPR mitigation in optical OFDM is not investigated. Therefore, in this paper, we study the use of SPP for PAPR mitigation in direct current optical (DCO) OFDM systems. Using computer simulations, it is shown that this method can achieve a rea-sonable PAPR reduction performance without BER degradation compared to the conventional DCO OFDM system. Further, the proposed scheme is less complex than the conventional selective mapping (CSLM) method since there is no multiplication of the DCO OFDM symbol with the phase sequences at the transmitter.

**Signature of the Supervisor**