Abstract:

In this work, the performance of CDMA (Code Division Multiple Access) schemes applied to optical networks is analyzed in terms of the bit error probability. Several types of spreading sequences are studied and performance expressions are derived and confirmed by computational simulation. The types of spreading sequences analyzed are Gold sequences, maximum-length sequences and optical orthogonal sequences. A new optical CDMA receiver with bipolar spreading and optical processing is presented. Additionally, a study on the optical beat interference in optical CDMA systems is performed. It is observed that this type of interference is negligible in such systems