

Abstract

Moustafa Hussein Aly

FWM in DCF based four-input all-optical NOR/AND gate

A simple four-input all-optical NOR/AND logic gate is simulated and evaluated. The design module is polarization dependent because of the four-wave mixing phenomenon applied to a dispersion compensation fiber. A successful logic function is obtained with a relatively simple simulation setup and low power requirements. With an optimized data signal power of 0.5 mW and probe power of 0.06 mW at a prominent BER with extinction ratio (ER)[16 dB, a noticeably low harmonic-level indicator of the output logic pulse is achieved. A comparison with related studies is presented to explore the merits of this work.