عنوان مقاله:

Low Size All Optical XOR and NOT Logic Gates Based on Two-Dimensional Photonic Crystals

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خلاصه مقاله:

This paper presents a square lattice of two-dimensional photonic crystal in the design of NOT and XOR logic gates. The important characteristic of this method is that the one structure allows implementation of two types of logic gate. The structure consists of two inputs and one output; thus, whenever it is used as a NOT gate, one of the entrances acts as a controller for the input. The Plane Wave Expansion (PWE) method is used to calculate the frequency band structure of the proposed lattice. The Finite Difference Time Domain (FDTD) method is used to calculate the optical power distribution in waveguide paths. The smaller size and simple structure of the design are advantages which make the proposed structure suitable for using in optical integrated circuits. In addition, the optical power transmitted to the output in "۰" logic state is very close to zero.

کلمات کلیدی:

Photonic crystals, Photonic Band Gap, Waveguide, Defect