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An ultra-compact and high speed all optical OR/NOR gate based on nonlinear PhCRR

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Abstract

In this paper we are going to propose and design an optical structure capable of working as an optical OR and NOR gate. Nonlinear Kerr effect combined with a photonic crystal ring resonator to perform the required switching tasks of the logic gates. For the resulted structure the minimum intensity contrast ratio for OR and NOR gate obtained to be 25 dB and 19.8 dB respectively. The maximum delay of the structure is about 4 ps.

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