FIBER OPTIC RING RESONATOR AS A PRELIMINARY PARAMETERS OF FIBER OPTICS GYROSCOPE SENSOR

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Abstract

Fiber optics ring resonator was analyzed using coupled mode theory and the principle of power transfer. Analyzes fiber optics ring resonator consist of one input, two opposite inputs, and two direct input based on single mode optical fiber. A dimension of ring resonator has a radius of 5 cm, path length of 10 m. The loss power factors of ring resonator and the switching loss on refractive index of 1.457. The design of fiber optics ring resonator produces a phase change in the intensity of the wave. The functions has shown effective wavelength $\lambda_{\text{eff}}$ 1.55003 μm for one input, 1.54992 μm for two opposite inputs, and 1.54996 μm for two direct input. The function intensity applied to obtain the initial parameters of the fiber optic gyroscope sensor for sensitivity $\Omega = 0.01 ^{\circ} / \text{h}$. Narrowband frequency modulation of 1 MHz to be used of sensor response. The intensity variation correspond to type of fiber optics ring resonator.

Keywords : ring resonator, gyroscope, narrowband, sensitivity