



Iranian Journal of Physics Research, Vol. 14, No. 1, 2014

Research note

## Effect of the change in ellipticity of the elliptic elements on band structure for 2D photonic crystal waveguide

A Gharaati and S H Zahraei

Department of Physics, Payame Noor University, Shiraz, Iran

(Received 25 January 2013 ; in final form 10 September 2013)

### Abstract

In this paper, using plane wave expansion method the polarization-dependent band structures are investigated in two dimensional photonic crystal waveguide with a square lattice composed of GaAs elliptic elements in air background. Then, the changes of the band structure with changing ellipticity of the elliptic elements are discussed. It is observed that by increasing the ellipticity of elements the size of the photonic band gap and the guiding eigen frequency will increase.

**Keywords:** photonic crystal waveguide, Photonic band gap, Band structure, Guiding eigen mode

For full article, refer to the Persian section