

THE INTENSITY-DEPENDENT BAND
SHIFT EFFECT IN 1D PHOTONIC CRYSTALS
FOR OPTICAL SIGNAL PROCESSING

E. Ya. Glushko

V.E. Lashkaryov Institute of Semiconductor Physics,
Nat. Acad. of Sci. of Ukraine
(41, *Prosp. Nauky, Kyiv 03680, Ukraine*)

S u m m a r y

The electromagnetic spectrum of an optically linear 1D glass-air comb photonic crystal is considered both in the cases of total internal reflection and open incidence. The bandgap-reflection/angular-frequency diagram is calculated for a glass/air comb in the infrared and visible regions. The effect of intensity-dependent reflection arising when a light beam passes through a nonlinear film covering the linear photonic crystal is investigated. The shift of photonic bands is analyzed for silica glass structures containing nonlinear inclusions, and two possible schemes of optical signal processing in a comb-like resonator are discussed.