

Abstract Submitted
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Study of plasmon-polariton in 1-D photonic crystals of dielectric and magneto optical layers under the effects of external magnetic field in the polar configuration JAIME ANDRES GIRON SEDAS, EDWIN MONCADA VILLA, Solid State Group, NELSON PORRAS MONTENEGRO, Solid State Group, Universidad del valle, Cali, Colombia — Photonic crystals (PCs) are artificial microstructures with a periodic spatial distribution of the dielectric constant, which enables us to manipulate and control the photons. In particular, the existence of photonic bands in the energy spectrum as well as photonic band gaps, forbidden frequency regions for light propagation have permitted quite a number of analogies with physical properties of semiconductor, this provides a perfect base for the construction of great varieties of photonic devices. In this case the superlattice is composed of alternating slabs of two materials, one is a dielectric, and the other is magneto-optical material. The interaction between plasma excitations and the electromagnetic radiation in the frequency region around null electric and magnetic responses in these arrangements, it gives a requisite for the existence of longitudinal waves, results in the excitation of modes that couple plasmons and optical fields. Those are known as Plasmon- Polaritons. We analyze the magneto-optic response of this PCs and the Plasmon-Polaritons behavior when an external magnetic field is placed in the growth direction of the structure using the scattering matrix approach for anisotropic layer stacks.

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