TRANSFORMATION OF THE POLARITONIC SPECTRUM OF A ONE-DIMENSIONAL MAGNETIC PHOTONIC CRYSTAL IN EXTERNAL CROSSED DC ELECTRIC AND MAGNETIC FIELDS

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The conditions are determined for a one-dimensional magnetic photonic crystal (MPC), under which square-low magnetooptical interaction leads to a number of specific features upon propagation and localization of magnetic TE and TM polaritons in external crossed dc electric **E** and magnetic **H** fields. Superlattice of easy-axis antiferromagnet nonmagnetic dielectric type choose as a basis for MPC. Easy magnetization axis of antiferromagnet **l**, external electric **E** and magnetic **H** fields are mutually perpendicular (**H**$\perp$**E**$\perp$**l**).

In particular it is shown: i) The spectrum of normal and surface magnetic polaritons is nonreciprocal ($\omega(\mathbf{k}) \neq \omega(-\mathbf{k})$). ii) Dispersion properties and character of localization of polaritonic excitations being dependent essentially on the ratio of electric and magnetic fields E/H, and relative orientation of vectors **E**, **H** and **n** (**n** is unit vector of a normal line to surface of a superlattice). iii) Varying size of magnetic and electrical fields it is possible effectively and in a wide range to change character of refraction of bulk electromagnetic wave which falling from without on a surface of MPC.

9.7 cm

13.4 cm

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