Investigation of photonic band gap in a one-dimensional lossy DNG/DPS photonic crystal

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Abstract

The effects of losses on the photonic band gap (PBG) in a one-dimensional lossy double-negative (DNG)/double-positive (DPS) photonic crystal are theoretically investigated. Using the Lorentz expressions for the permittivity and permeability for the dispersive and lossy DNG material, it is found that the magnetic loss, in comparison with the electric loss, has a more salient influence on the PBG. The magnetic loss is shown to play a vitally important role in the analysis of PBG for this DNG/DPS photonic crystal.

Keyword：Photonic crystal,Optical properties,Double-negative material