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The use of Dirichlet-Neumann mapping method for examining the band structure of annular metalic photon crystals

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Abstract

Using the Dirichlet-Neumann mapping method, we were able to calculate the photonic band structure of the annular metal photonic crystals. The surveyed grid is square and scattering centers (bars) are in the form of air rings located on the metal surface, as well as metal rings located in the air. The photonic band structure is calculated for both polarizations E and H for electromagnetic waves. The results indicate that there are frequency bands (photon strips) plus flat bands at low light speeds. The effect of the size of the air and metal rings on photonic tape structures has been theoretically investigated.

Keywords: annular metallic photonic crystals, Dirichlet-to-Neumann map method, photonic band structure, photonic band gap

For full article, refer to the Persian section