

Investigation of photonic band structure in a one-dimensional  
superconducting photonic crystal

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Abstract

The angle- and thickness-dependent photonic band structures in a one-dimensional superconducting photonic crystal are theoretically investigated. The analysis is made within the framework of the Bloch theorem together with the transfer matrix method in a multilayer structure. The photonic band structures are investigated as functions of the thicknesses of the constituent superconducting and dielectric layers. Additionally, the effects coming from the oblique incident angle for both TE and TM waves are also numerically elucidated. The existence of omnidirectional gaps in this kind of photonic crystal is also found.

Keyword : photonic band structures, superconducting photonic crystal, transfer matrix, omnidirectional gaps