

Energy Band Structure and its Characteristics of a Two-Dimensional Metallic Photonic Crystal

Xianfeng Bao^a and Duanzheng Yao^{a,b}

^a Department of Physics, Wuhan University, Wuhan 430072, China

^b Key Laboratory of Acoustic and Photonics Material and Devices, Ministry of Education, Wuhan University, Wuhan 430072, China

Reprint requests to D. Y.; Fax: 86 27 68752569; E-mail: dzyao@whu.edu.cn

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The energy band structure and its characteristics of a two-dimensional metallic photonic crystal with square lattice structure have been studied by using the finite-difference time-domain (FDTD) algorithm. In order to determine the band structure accurately, the spatial distribution of the eigenfunction has been analyzed. By comparing the distribution of different wave vectors and of different energy band eigenmodes, an effective method to determine the band structure was found, which has been verified by the simulation results.

Key words: Metallic Photonic Crystal; FDTD; Eigenmode; Band Structure.