论文

一维光子晶体全反射隧穿的色散特性

刘启能[1], 刘沁[2]

1. 重庆工商大学计算机科学与信息工程学院, 重庆 400067;
2. 重庆工商大学设计艺术学院, 重庆 400067

摘要：

利用介质材料的色散关系和特征矩阵法研究了一维光子晶体中TE波和TM波的全反射隧穿效应随色散的变化特征. TE波和TM波全反射隧穿导带的频率中心随色散强度的增加而降低, 频率宽度随色散强度的增加而增大. TE波和TM波的全反射隧穿导带的频率中心随入射角的增加而升高, 频率宽度随入射角的增加而减小. 这些研究结果拓宽了对一维光子晶体中TE波和TM波波全反射隧穿效应的认识.

关键词： 光子晶体 色散 全反射隧穿 复折射率

Dispersion Characteristics of Total Reflection Tunnel in 1D Photonic Crystal

LIU Qi-neng[1], LIU Qin[2]

1. Computer Science and Information Engineering, Chongqing Technology and Business University, Chongqing 400067, China;
2. Design and Art Institute, Chongqing Technology and Business University, Chongqing 400067, China

Abstract:

Using the dispersion relation and the characteristic matrix method, dispersion characteristics of the total reflection tunnel of TE wave and TM wave in 1D photonic crystal are studied. The total reflection tunnel frequency center decreases with the increase of the dispersion intensity, and the total reflection tunnel frequency width increases with the dispersion of dispersion intensity. The total reflection tunnel frequency center increases with the dispersion of incident angle, and the total reflection tunnel frequency width decreases with the dispersion of incident angle. These findings expand the understanding of the total reflection tunnel of TE wave and TM wave in 1D photonic crystal.

Keywords: Photonic crystal   Dispersion   Total reflection tunnel   Plural refraction index

通讯作者:

作者简介:

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