论文　　　　　　　　　　　最新目录 | 下期目录 | 过刊浏览 | 高级检索　　　　<< Previous Articles | Next Articles >>

基于超材料的正多边形电磁波聚焦器设计

杨成福[①]　黄铭[①]　杨晶晶[①②]　印金国[①]　彭金辉[②]*

[①](云南大学信息学院　昆明　650091)
[②](昆明理工大学材料与冶金工程学院　昆明　650093)

Design of the N-sided Regular Polygonal Electromagnetic Wave Concentrator Using Metamaterials

Yang Cheng-fu[①]　Huang Ming[①]　Yang Jing-jing[①②]　Yin Jin-guo[①]　Peng Jin-hui[②]*

[①](School of Information Science and Engineering, Yunnan University, Kunming, 650091 China)
[②](Faculty of Materials and Metallurgical Engineering, Kunming University of Science and Technology, Kunming 650093, China)

摘要	参考文献	相关文章

Download: PDF (593KB)　　HTML 1KB　　Export: BibTeX or EndNote (RIS)　　Supporting Info

摘要 该文基于变换光学方法，导出了正多边形电磁聚焦器的介电常数和磁导率的分布，并用有限元分析软件COMSOL进行了证实。分别仿真了TE波和线源激励下正三边形、正四边形、正五边形和正六边形电磁聚焦器附近的电场分布和能量密度分布，并讨论了正多边形电磁聚焦器聚焦区域面积大小和电磁参数偏离理论值对其聚焦特性的影响，结果表明：聚焦区域越小，电磁聚焦越强；当超材料的电磁特性偏离理论值时，电磁聚焦特性发生变化。

关键词：　超材料　电磁聚焦　电磁场　有限元法

Abstract：　Based on transformation-optical approach, the distribution of permittivity and permeability for the N-sided regular polygonal electromagnetic wave concentrator is derived and functionality of the concentrator is numerically confirmed by the finite element solver COMSOL. Electric field and total energy distributions in the vicinity of the three-, four-, five- and six-sided regular polygonal concentrators are simulated. The influence of the focus area and deviation of material parameters from perfect N-sided regular polygonal concentrator on the concentrating effect is studied. The results show that the smaller the focus area, the stronger the total energy density; The deviation of material parameters from perfect concentrator results in a distortion of the electrical field and total energy density distribution.

Keywords：　Metamaterials　Electromagnetic wave concentrator　Electromagnetic field　Finite element method

Service
▶ 把本文推荐给朋友
▶ 加入我的书架
▶ 加入引用管理器
▶ Email Alert
▶ RSS

作者相关文章
▶ 杨成福
▶ 黄铭
▶ 杨晶晶
▶ 印金国
▶ 彭金辉

引用本文:

杨成福, 黄铭, 杨晶晶, 印金国, 彭金辉.基于超材料的正多边形电磁波聚焦器设计[J]　电子与信息学报, 2010,V32(10): 2485-2489

Yang Cheng-Fu, Huang Ming, Yang Jing-Jing, Yin Jin-Guo, Peng Jin-Hui.Design of the N-sided Regular Polygonal Electromagnetic Wave Concentrator Using Metamaterials[J]　, 2010,V32(10): 2485-2489

链接本文:

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2009.01027　　或　　http://jeit.ie.ac.cn/CN/Y2010/V32/I10/2485