



吉首大学学报自然科学版 » 2012, Vol. 33 » Issue (5): 59-61 DOI: 10.3969/j.issn.1007-2985.2012.05.015

[物理与电子](#) | [最新目录](#) | [下期目录](#) | [过刊浏览](#) | [高级检索](#) | [Previous Articles](#) | [Next Articles](#)

## 基于时域有限差分法的手机辐射计算分析

(1.吉首大学物理与机电工程学院,湖南 吉首 416000; 2.吉首大学信息科学与工程学院,湖南 吉首 416000)

### Mobilephone Radiation Calculation Based on Finite Difference Time Domain Method

(1.College of Physics and Electromechanical Engineering,Jishou University,Jishou 416000,Hunan China;2.College of Information Science and Engineering,Jishou University,Jishou 416000,Hunan China)

- 摘要
- 参考文献
- 相关文章

全文: [PDF \(470 KB\)](#) | [HTML \(1 KB\)](#) | 输出: [BibTeX](#) | [EndNote \(RIS\)](#) | [青景资料](#)

**摘要** 采用时域有限差分法,构建了手机与人体相互作用的模型.在频率为1 800 MHz下计算了手机上涂敷碳纳米管复合物吸波材料前后对电磁辐射的比吸收率SAR,并由此得到天线辐射方向图.计算结果表明:手机上涂覆碳纳米管CNTs复合物吸波材料可以降低手机比吸收率值,对天线辐射方向图影响很小.

**关键词:** 手机辐射 时域有限差分法 比吸收率 碳纳米管

**Abstract:** Using finite difference time domain(FDTD)method,the model of interaction between mobilephone and human body is established.The values of SAR absorbed by human body and radiation pattern of the antenna are calculated under the irradiation of a mobilephone before and after coating carbon nanotubes (CNTs) composites at 1 800 MHz.The results shows that the use of CNTs composites absorbing material on the mobilephone can obviously reduce SAR values and the antenna performance is less affected.

**Key words:** radiation of mobilephone FDTD SAR CNTs

**作者简介:** 宋治国 (1984-),男,湖南保靖人,吉首大学物理与机电工程学院教师,硕士,主要从事电磁场数值计算、信号与信息处理研究.

#### 引用本文:

宋治国,邓小飞,张银行. 基于时域有限差分法的手机辐射计算分析[J]. 吉首大学学报自然科学版, 2012, 33(5): 59-61.

SONG Zhi-Guo,DENG Xiao-Fei,ZHANG Yin-Xing. Mobilephone Radiation Calculation Based on Finite Difference Time Domain Method[J]. Journal of Jishou University (Natural Sciences Edit, 2012, 33(5): 59-61.

[1] ANSI,ANSIIEEE C95.1-1992 IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Field kHz to 300 GHz [M].New York:IEEE,1992.

[2] JIN M,YING Z,HE S.The Impact of Mobile Shell Materials on SAR [C]//Asia-Pacific Conference Proceedings,Michigan:IEEE,2005:423-427.

[3] HWANG J N,CHEN F C.Reduction of the Peak SAR in the Human Head with Metamaterials [J].IEEE Transaction on Antennas and Propagation,2006,54:3 763-3 770.

[4] KWAK S I,SIM D U,KWON J H,et al.Experimental Tests of SAR Reduction on Mobile Phone Using EBG Structures [J].Electronics Letters,2006(9):568-569.

[5] 李斌鹏,王成国,王文.碳基吸波材料的研究进展 [J].材料导报A: 综述篇,2012,26(4):9-14.

[6] CLAUDIO R F,GIOVANI B,PEDRA1 A C,et al.Comparison of Electromagnetic Absorption Characteristics in the Head of Adult and a Children 800 MHz Mobile Phones [C]//SBMO/IEEE MTT-S International Conference on Microwave and Optoelectronics,Brasilia:IEEE,2005:523-528.

服务

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [E-mail Alert](#)
- ▶ [RSS](#)

作者相关文章

- ▶ [宋治国](#)
- ▶ [邓小飞](#)
- ▶ [张银行](#)

- [1] 陈莉华, 李佑楷, 晏学万, 杨钊, 张俊生. 多壁碳纳米管上原位生长CdTe量子点及与牛血清蛋白的偶联[J]. 吉首大学学报自然科学版, 2012, 33(4): 101-105.
- [2] 刘丽丽, 汤炳书. 偏振滤波一维二元光子晶体的实现[J]. 吉首大学学报自然科学版, 2007, 28(5): 56-59.
- [3] 汤炳书, 周艳玮, 徐健良. 二维正方形光子晶体带隙的FDTD模拟[J]. 吉首大学学报自然科学版, 2005, 26(3): 83-85.