西安电子科技大学学报 2007 34 (4): 600-604+668 ISSN: 1001-2400 CN: 61-1076/TN

NURBS-UTD方法的爬行波射线寻迹算法

王楠, 梁昌洪, 张玉, 陈铭

(西安电子科技大学 天线与微波技术重点实验室，陕西 西安 710071)

收稿日期 修回日期 网络版发布日期 2007-7-10 接受日期

摘要 针对一致性几何绕射理论方法不能处理任意弯曲模型这一缺陷，研究了基于任意曲面模型的一致性几何绕射理论方法，采用数值的微分几何手段提出了基于非均匀有理B样条建模技术的一致性几何绕射理论方法中在暗区占主要地位的爬行波射线的寻迹算法，使得一致性几何绕射理论方法可应用到复杂电磁目标的分析中．这种算法可以应用于已有的板、柱、锥模型，并且可以有效地处理以往无法操作的任意光滑凸曲面．

关键词 非均匀有理B样条 一致性几何绕射理论 爬行波 射线寻迹

分类号 TN011 TN015

Study on the creeping ray-tracing algorithm of NURBS-UTD

WANG Nan,LIANG Chang-hong,ZHANG Yu,CHEN Ming

(Key Lab. of Antennas and Microwave Technology, Xidian Univ., Xi′an 710071， China)

Abstract

To overcome the drawback that the method of the uniform geometrical theory of diffraction can not be applied to arbitrary curved targets, the method of the uniform geometrical theory of diffraction based on models constructed by arbitrary curved surfaces is studied and the algorithm that traces the creeping rays which are in the highest flight in the shadow region is presented where the numerical differential geometry method is introduced in the process of ray-tracing. What is studied here makes the method of the uniform geometrical theory of diffraction able to be applied to analyze complex electromagnetic targets which can not be dealt with before. The algorithm can be applied to models constructed by arbitrary curved surfaces including the board, cylinder and cone that are already used and the validity and usefulness can be seen from numerical results.

Key words non-uniform rational B-spline uniform geometrical theory of diffraction creeping ray ray tracing

DOI:

通讯作者