

软件、算法与仿真

面向应用的射频仿真系统近场效应误差修正

MA Jing1, JIN Cong-jun1, FEI Jin-dong1, CHEN Dong2

1. 北京仿真中心航天系统仿真重点实验室, 北京 100854; 2. 中国空间技术研究院通信卫星事业部, 北京 100094

摘要:

根据当前射频仿真系统的具体应用, 介绍了用单脉冲比幅测角方式的近场效应修正方法。通过计算导引头的到达角误差, 在三元天线组振幅的梯度方向上调整振幅幅值, 使到达角误差趋于零。由此时的三元天线组振幅值计算合成目标的位置, 生成方位角和俯仰角的近场效应误差修正表格。推导出适合于波导裂缝阵天线导引头的单脉冲比幅测角模型, 并针对均匀圆形阵的波导裂缝阵天线特点, 简化了单脉冲比幅测角时所需要的和、差信号的计算方法。本文方法所生成的近场效应误差修正表格对方位角的精度及对俯仰角的精度。满足实际应用的精度误差要求。简化后的单脉冲比幅测角在满足精度要求的同时, 降低了算法的复杂度, 平均提高程序运行时间55%。

关键词: 近场效应误差修正 单脉冲比幅测角 射频仿真

Near-field error correction on RFSS for applications

马静, 金从军, 费锦东, 陈东

1. Key Laboratory on Space System Simulation, Beijing Simulation Center, Beijing 100854, China;
2. China Academy of Space Technology, Beijing 100094, China

Abstract:

According to the applications for current radio frequency simulation system (RFSS), a near-field error correction method using mono-pulse amplitude-comparison measure is proposed. This method produces two tables of near field error correction by adjusting the amplitudes on triad of antenna on the gradation direction to make the error of direction-of-arrival (DOA) approaching zero. Meanwhile, this method focuses on the model of mono-pulse amplitude-comparison for seeker setting a circular slot array of wave guide. Based on the character of symmetry for the slot array, the process of forming the SUM signal and MINUS signal is simplified. The precision of the tables for near-field error correction satisfies the demands of RFSS with the deflection for azimuth angle and elevation angle. The simplified method also meets the demand of RFSS and reduces the running time by 55%.

Keywords: near-field error correction mono-pulse amplitude-comparison method radio frequency simulation

收稿日期 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-506X.2011.08.42

基金项目:

通讯作者:

作者简介:

作者Email:

参考文献:

本刊中的类似文章

扩展功能

本文信息

▶ Supporting info

▶ PDF **(OKB)**

▶ [HTML全文]

▶ 参考文献[PDF]

▶ 参考文献

服务与反馈

▶ 把本文推荐给朋友

▶ 加入我的书架

▶ 加入引用管理器

▶ 引用本文

▶ Email Alert

▶ 文章反馈

▶ 浏览反馈信息

本文关键词相关文章

▶ 近场效应误差修正

▶ 单脉冲比幅测角

▶ 射频仿真

本文作者相关文章

PubMed