论文

一种求解电大平台天线互耦的时域积分方程快速算法

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摘要
该文针对电大尺寸平台天线互耦问题，提出一种基于几何绕射理论加速的时域积分方程快速算法。在求解时域积分方程的经典时间步进法基础上，引入几何绕射理论中的绕射线寻迹，提高了迟滞积分的计算效率。数值算例证明了该方法能够有效地加速时间步进法的求解过程，对电大平台天线布局优化设计具有理论指导意义。

关键词　　天线　电大平台　互耦　时域积分方程　快速算法　时间步进法　几何绕射理论　寻迹

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A Fast Algorithm of Time Domain Integral Equation in Resolving Antenna Mutual Coupling on Electrically Large Platform

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Abstract
Considering the antenna mutual coupling problems on electrically large platforms, a fast algorithm of Time Domain Integral Equation (TDIE) based on the Geometry Theory of Diffraction (GTD) is proposed. On the basis of classical Marching-On in Time (MOT) solver, diffraction ray tracing method in GTD is introduced, and the calculation efficiency of retarded-time integral is raised. Numerical results prove that the proposed method can accelerate the process of MOT, and has the theoretical advising meaning towards the optimization design of antenna's layout on electrically large platforms.

Key words　Antenna　Electrically large platform　Mutual coupling　Time Domain Integral Equation (TDIE)　Fast algorithm　Marching-On in Time (MOT)　Geometry Theory of Diffraction (GTD)　Ray tracing

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