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论文

介质涂敷电大腔体电磁散射IPO研究

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摘要

将迭代物理光学法(IPO)推广应用于研究具有非完纯导电边界的电磁散射问题,建立了相应的理论模型,并应用到内壁涂敷介质的电大尺寸腔体的电磁散射特性分析中。在每一次IPO迭代步骤中,应用Fresnel反射系数计算出介质表面总场。通过多次迭代,求出腔体内壁上稳定的电磁场分布,进而计算出腔体的电磁散射特性。数值结果表明了这种扩展的IPO方法的在分析电大尺寸介质涂敷目标中的正确性和高效性。

关键词 迭代物理光学 Fresnel反射系数 介质涂敷腔体

分类号 O441

IPO for Analysis of EM Scattering by Dielectric Coated Electrically Large Cavities

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Abstract

A theoretical model of Iterative Physical Optics (IPO) is established for the ElectroMagnetic (EM) scattering problem with imperfectly conducting boundaiy and applied to the analysis of EM scattering by a dielectric coated electrically large cavity. In each IPO iteration step, the total field on the dielectric surface is computed utilizing the Fresnel reflection coefficient. By employing iteration process, the EM field distribution on the inner wall of the cavity is predicted and then the scattering fields of the cavity are obtained. Numerical results demonstrate that the improved IPO algorithm is correct and effective for the analysis of dielectric coated electrically large targets.

Key words Iterative Physical Optics （IPO） Fresnel reflection coefficient Dielectric coated cavity

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