

UTD算法中平板二阶场的求解

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摘要 根据惠更斯原理, 平板二阶场的求场可以转化为一阶场的迭加, 因此射线追踪就是平板二阶场计算的关键. 按照镜像法的思想, 提出了平板二阶场的射线追踪方法. 对于反射-反射, 反射-绕射, 以及绕射-反射都可以根据源点或场点关于板的镜像点很容易得到解析结果; 对于绕射-绕射, 采用几何与代数相结合的办法, 将二阶场的射线追踪转化为方程组的求解, 给出了必要的理论证明以及算例, 结果表明该方法精度和速度与数值搜索方法相比都有所提高.

关键词 [一致性几何绕射理论](#) [平板](#) [射线追踪](#) [二阶射线](#)

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Computation of double reflection and the diffraction field of plane for UTD

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Abstract

According to Huygens' Principle, the computation of the second rank field of a flat plane can be solved by calling the first rank field function twice, so ray trace is the key. The method for the computation of the second rank field of the flat plane is deduced using the image method in this paper. For the ray trace of reflection-reflection, reflection-diffraction, and diffraction-reflection, the result can be easily obtained by using the image point of the source point or field point. For the diffraction-diffraction case, geometry is hybrid together with algebra to change the ray trace for the calculation of the equations system. Examples and analytical deduction show the validity of the method. Compared to the method of searching the points used before, the method derived in this paper is better in accuracy and speed.

Key words [uniform theory of diffraction](#) [flat plane](#) [ray trace](#) [second rank ray](#)

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