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复杂目标高频区 RCS 的实时计算

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COMPUTING HIGH FREQUENCY RCS OF COMPLEX TARGETS IN REAL TIME

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摘要

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摘要

提出一种在安装图形加速卡的高性能微机上实时计算复杂目标高频区雷达散射截面(RCS)的方法。该方法利用了“图形电磁计算(GRECO)”的新技术。目标用G2Catmul-om(C-R)几何样条模拟,由图形加速卡硬件完成遮挡、消隐运算,运用Phong光照模型着色渲染目标可见表面,应用物理光学(PO)、等效电流法(MEC)、物理绕射理论(PTD)及阻抗边界条件(IBC)等方法计算目标高频区雷达散射截面(RCS)。

关键词: 图形电磁计算(GRECO) 复杂目标 电磁散射

Abstract:

A new approach is presented to compute the high frequency radar cross section(RCS)of complex radar targets in real time, using a Personal Computer with a 3 D graphics hardware accelerator. This method implements a new technique called “Graphical Electromagnetic Computing(GRECO)”.The target is modeled with G 2 Catmull Rom(C R) geometric spline and the image of the target is rendered and displayed on the screen in real time using Phong illumination model and the 3 D graphics accelerator, and then the high frequency RCS can be computed through Physical Optics (PO),Method of Equivalent Currents(MEC),Physical Theory of Diffraction(PTD),and Impedance Boundary Condition(IBC) techniques.

Keywords: GRECO complex radar targets electromagnetic scattering

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