

研究简报

## MLFMA结合最佳一致逼近快速求解目标宽带RCS

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摘要

该文将多层快速多极子与最佳一致逼近结合计算了目标宽带的电磁散射特性。通过求解给定频带内的切比雪夫节点和节点处的目标表面电流, 实现了频带内任意频点表面电流的快速预测, 从而快速分析了目标宽带电磁散射特性。将计算结果与MLFMA逐点计算的结果进行了比较, 结果表明在不影响精度的前提下, 该方法大大地提高了计算效率。

关键词 [宽带雷达散射截面](#) [多层快速多极子算法](#) [最佳一致逼近](#)

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## Fast Solutions of Wide-Band RCS Pattern of Objects Using MLFMA with the Best Uniform Approximation

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Abstract

MultiLevel Fast Multipole Algorithm (MLFMA) in conjugation with the best uniform approximation is applied to the scattering analysis of an arbitrary shaped perfect electric conductor over a wide frequency band in this paper. The nodes of Chebyshev within a given frequency range are found firstly, and the surface electric currents at these nodes are computed with MLFMA. The surface current on perfect electric conductor is expanded in a polynomial function via the best uniform approximation, then the electric current distribution can be obtained at any frequency within the given frequency range, which is used to compute the scattered fields and the wide-band Radar Cross Section (RCS). The numerical results presented in this paper are compared with the results obtained with MLFMA at each frequency. The results show that the computational efficiency is improved drastically without sacrificing much accuracy.

Key words [Wide-band radar cross section](#) [MultiLevel Fast Multipole Algorithm\(MLFMA\)](#) [Best uniform approximation](#)

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