

工程与应用

基于混合粒子群算法的二维导体柱目标识别

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摘要 从电磁场的积分方程出发, 采用矩量法 (MOM) 计算导体柱电磁散射的过程; 以实际测量的散射场与计算散射场的偏差程度作为目标函数; 将带优化变量设置为描述导体柱轮廓的形状函数的傅里叶展开式系数, 通过混合粒子群算法 (HPSO) 对带优化变量进行优化, 使目标函数的最小值用来进行电磁成像。仿真结果表明: HPSO 简单、通用, 具有较强的抗随机噪声干扰的能力。

关键词 [矩量法](#) [混合粒子群算法](#) [电磁成像](#)

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Target identification of two-dimensional conducting targets based on HPSO

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Abstract

A numerical method of the reconstruction of conductor cylinders is presented. The forward scattering problem is analyzed by using the method of moment. The error between measured scattering data and computed scattering data is considered as the objective function. The contour of each conducting object is denoted by a shape function which is approximated by a Fourier series. The inverse scattering problem is transferred into an optimization problem by minimizing the objective function with the coefficients of Fourier series being the optimization parameters which is solved by the Hybrid particle swarm optimization. The simulation shows that this method is simple, versatile and robust.

Key words [method of moment](#) [hybrid particle swarm optimization](#) [electromagnetic imaging](#)

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