通信与信息工程

最新目录 | 下期目录 | 过刊浏览 | 高级检索   << Previous Articles | Next Articles

基于改进的粒子群算法实现阶梯幅度量化相控阵天线的低副瓣

徐锋明，孟令琴，谢亚楠

（上海大学 特种光纤与光接入网省部共建重点实验室，上海 200072）

Realization of Low Sidelobe for Step Quantized Amplitude Phased Array Antennas Based on Modified Particle Swarm Optimization

XU Feng-ming,-MENG Ling-qin,XIE Ya-nan

(Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Shanghai University, Shanghai 200072, China)

- 摘要
- 参考文献
- 相关文章

Download: PDF (1517KB)   HTML (1KB)   Export: BibTeX or EndNote (RIS)   Supporting Info

摘要

从统计意义上逼近传统的连续加权分布，利用无约束优化方法求出一组最优量化台阶.在此基础上，提出处理加权宽度的改进约束整数粒子群优化(particle swarm optimization,PSO)算法，实现阶梯幅度量化加权.设计了处理量化幅度权值的Powell PSO混合算法，进一步降低峰值副瓣电平.首次设计星载降水测量雷达(precipitation radar, PR)相控阵天线的低副瓣,改进的PSO算法在寻优能力、算法鲁棒性方面都得到了增强.

关键词： 低副瓣；阶梯量化幅度；粒子群优化算法；星载降水测量雷达；相控阵天线

Abstract：

This paper discusses the application of the particle swarm optimization (PSO) algorithm to accomplish low sidelobe for step quantized amplitude phased array antennas. A group of multi step quantized amplitude weights are obtained using an unconstrained optimization method, which approaches the traditional Taylor distribution statistically. An improved constrained PSO algorithm coping with step widths is used to achieve step quantized amplitude. The Powell PSO hybrid algorithm for quantized amplitude weights is proposed to lower the peak sidelobe level for antennas. Low sidelobe for spaceborne precipitation radar (PR) phased array antennas using the method is designed. The improved PSO algorithm has enhanced ability of optimization and better robustness.

Keywords： low sidelobe; step quantized amplitude; particle swarm optimization (PSO) algorithm; spaceborne precipitation radar (PR); phased array antennas

Service
- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- Email Alert
- RSS

作者相关文章

引用本文：

·基于改进的粒子群算法实现阶梯幅度量化相控阵天线的低副瓣[J] 上海大学学报(自然科学版)，2010,V16(4): 361-366

.Realization of Low Sidelobe for Step Quantized Amplitude Phased Array Antennas Based on Modified Particle Swarm Optimization[J] J.Shanghai University (Natural Science Edition), 2010,V16(4): 361-366

链接本文：

http://www.journal.shu.edu.cn//CN/   或   http://www.journal.shu.edu.cn//CN/Y2010/V16/I4/361

没有本文参考文献

没有找到本文相关文献