论文

基于分形可变步长LMS算法的海杂波中微弱目标检测

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摘要

该文主要研究了基于Hurst指数与可变步长LMS算法相结合的分析方法在海杂波微弱目标检测中的应用。一直以来，分形理论与统计理论是分别应用到目标检测中的，该文将分形可变步长LMS算法引入到海杂波微弱目标检测中，并在此基础上提出一个海杂波中的微弱目标检测模型，初步实现了基于LMS算法的检测方法与基于单一分形特征的检测方法的结合。最后，采用X波段雷达实测海杂波数据进行验证，结果表明该检测模型具有良好的检测海杂波中微弱目标的能力。

关键词　目标检测　分形　可变步长LMS　海杂波

分类号　TN959.72

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Low-Observable Target Detection in Sea Clutter Based on Fractal-based Variable Step-Size LMS Algorithm

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Abstract

This paper mainly studies the application of the combination of Hurst exponent and variable step-size LMS algorithm in low-observable target detection in sea clutter. Up to now, fractal theory and statistic theory are applied to target detection respectively. In this paper, the fractal-based variable step-size Least Mean Square (LMS) algorithm is introduced and a novel low-observable target detection model is proposed based on the algorithm. And the combination of LMS algorithm and single fractal characteristic in target detection is elementarily realized. Finally, X-band real sea clutter is used for verification and the results indicate that the proposed model has a good performance of detecting low-observable target in sea clutter.

Key words　Target detection　Fractal　Variable step-size LMS　Sea clutter

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