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一种基于多级维纳滤波的多通道SAR动目标检测算法

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Multi-channel SAR Ground Moving Target Detection Based on Multistage Wiener Filter

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摘要 该文针对机载多通道SAR-GMTI系统及实测数据，提出一种新的地面慢动目标检测算法。新算法利用多级维纳滤波器实现多通道SAR系统杂波抑制，同时结合对角加载技术和非均匀检测器，进一步改善SAR系统在非均匀环境下的动目标检测性能。实测数据实验结果表明：与常规的自适应检测方法相比，新算法能够明显提高系统对杂波的抑制能力及非均匀环境下系统的动目标检测性能。

关键词： 动目标检测　多级维纳滤波器　对角加载　非均匀检测器　恒虚警检测　自适应功率剩余

Abstract： A novel approach to moving target detection is proposed for multi-channel SAR system. This approach utilizes multistage Wiener filter to suppress clutter. To improve performance of moving target detection in heterogeneous clutter environment, this new approach also combines diagonal loading techniques and non-homogeneity detector. Experimental results on measured SAR data are presented to demonstrate that compared to conventional adaptive SAR/GMTI method, the proposed method shows better clutter suppression capability and moving target detection performance in heterogeneous clutter environment.

Keywords： Moving target detection　Multistage Wiener Filter (MWF)　Diagonal loading　Non-Homogeneity Detector (NHD)　Constant False Alarm Rate (CFAR) detection　Adaptive Power Residual (APR)

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