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论文

用聚束SAR对慢速运动目标进行轨迹跟踪和参数估计的方法

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摘要
针对聚束式合成孔径雷达(SAR)动目标检测的问题，把回波信号进行连续重叠地时域分组，每组信号可以看成是来自一个时域子孔径，然后在每个子孔径内分别成像。地面固定目标在每幅图像上的成像情况是相同的，通过彼此相减就可以消去，达到了抑制杂波的目的，而运动目标由于每个时刻的位置都在变化，在每幅图像上的位置是不同的，从而在相减后剩余下运动目标的图像，把这些图像拼接起来就再现了运动目标的运动轨迹，根据运动轨迹就可以对其运动参数进行估计。该文给出了这个方法的原理推导和具体的检测过程。仿真结果证明了该方法的有效性。

关键词 合成孔径雷达(SAR) 运动目标检测和成像 时域子孔径

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Method of Tracking Ground Slowly Moving Target and Estimating Its Velocity Parameters by Spotlight Mode Synthetic Aperture Radar

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Abstract
Focused the issues on Moving Target Detection (MTD) in spotlight mode Synthetic Aperture Radar (SAR),the echo is divided into groups that are continuous and partly overlapping in time domain. Every group of data can be regarded as coming from a sub-aperture of time domain. The images of same ground scene are then generated in multiple sub-apertures. By Subtracting two consecutive sub-aperture SAR images, the stationary clutter or targets that appear in a sub-aperture SAR image can be suppressed or substantially eliminated, but moving target image is left. Superposing the result of subtracting every two consecutive sub-aperture SAR images, the tract of this moving target is obtained. Furthermore, its moving parameters can be estimated. This paper proved this method in theory and the simulation result testifies its validity.

Key words Synthetic Aperture Radar (SAR) Motion Target Detector (MTD) Time domain sub-aperture

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