论文

基于去调频宽带LFM信号的二次距离压缩算法及其实时实现

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摘要
该文在基于匹配滤波的二次距离压缩算法(SRC)基础上，通过对去调频的线性调频(LFM)信号的时、频域关系的分析，给出基于去调频LFM信号的SRC算法，与距离多普勒算法(RD)和普通LFM信号SRC算法对比，分析该算法的运算量，说明该算法适合于去调频体制SAR实时成像处理。对于去调频SAR数据采用该算法压缩得到清晰的图像，同时对比斜视下SRC与RD成像的结果。验证了在高分辨率实时成像时SRC算法优于RD算法。

关键词　　合成孔径雷达　二次距离压缩　LFM信号　去调频宽带LFM信号

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SRC Imaging Method of De-chirped Broadband LFM Signal and Its Real Time Implementation

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Abstract

Based on the analysis of the time and frequency domain character of the de-chirped broadband LFM signal, this paper presents the SRC imaging method of S AR with de-chirped LFM signal. In comparison with the RD and SRC method of normal LFM signal with the same swath and resolution, this method is proved suitable for real time processing with a decrease of data to be processed and a little amount of calculation increased. Data collected in de-chirp LFM SAR system is formed into images with this method and demonstrates it is better than RD to form fine-resolution images when there exits a squint angle in SAR system, which is usually the case in reality.

Key words　Synthetic Aperture Radar（SAR）　Second Range Compression（SRC）　LFM signal　De-chirping wide bandwidth LFM signal

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