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应用

机载双天线斜视干涉SAR自配准成像方法研究

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摘要:

本文针对机载双天线斜视干涉SAR成像过程分析了主辅天线回波信号距离历程偏移特性、方位多普勒频率特性及其与正侧视系统下的区别; 讨论了基于扩展CS算法 (ECS算法) 距离向自配准成像过程中距离向平移因子和缩放因子; 推导了距离向自配准成像处理的基本公式和具体实现过程。通过计算机仿真实现了机载双天线斜视干涉SAR系统在成像处理阶段实现距离向高精度的自配准的过程。通过对配准前后主辅图像相关特性、干涉相位纹图质量以及配准误差的分析, 验证了推导过程的正确性和该算法的有效性。

关键词: 斜视干涉SAR; 自配准; 成像算法 扩展CS算法 (ECS算法)

Research on the airborne dual-antenna squinted InSAR auto-registration Imaging method

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Abstract:

Arming at airborne dual-antenna squinted InSAR imaging processing procedures, the paper has analyzed the characteristics of the distance course of two antennas echo signals, the feature of the azimuth Doppler frequency and the difference among them when the squint angle of InSAR system is zeros. The range shift factor and scaling factor used in the auto-registration imaging procedures base on the extended Chirp Scaling (ECS) algorithm have been discussed. The paper has given the basic formulations and definite implementation

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procedures. By means of computer simulation, the paper has taken out the highly accurate range auto-registration based on ECS imaging algorithm of the airborne dual-antenna squinted InSAR data. The statistic characteristic of correlation coefficient of two images after auto-registration is given and the quality of interferometric fringes image has been contrasted. The simulation result demonstrated that the basic formulations and definite implementation procedures in this paper are right and the validity of the algorithm presented in the paper is proved.

Keywords: Airborne dual-antenna squinted InSAR auto-registration Imaging algorithms extended Chirp Scaling (ECS)

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