

论文

## 主星带小卫星分布式SAR干涉的相对测高精度分析

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摘要

相对测高精度是干涉SAR测高性能的重要指标之一。该文根据主星带小卫星分布式SAR系统的实际空间几何条件下建立了干涉测高原理; 基于相对测高几何, 推导了相对测高精度与干涉相位误差的关系式; 理论分析了基线去相关、图像配准误差去相关、热噪声去相关等, 并推导了图像相关系数; 最后, 仿真分析了图像去相关因素对于主星带小卫星分布式SAR干涉的相对测高精度影响。结果发现: 对于平坦地形来说, 热噪声与配准误差是影响相对测高精度的主要因素, 而基线去相关影响相对较小。

关键词 [分布式小卫星](#) [合成孔径雷达干涉](#) [相对测高精度](#) [去相关](#)

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## Analysis of Relative Height Accuracy for Master Satellite and Distributed Small Satellite SAR Interferometry

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Abstract

Relative height accuracy is one of key indexes for SAR interferometry. In this paper, based on actual geometrical condition for master satellite and distributed small satellite SAR system, height measure principle is established. Based on geometrical condition of relative height measure, the relations between relative height accuracy and interferometric phase error are deduced. Then, noise decorrelation, baseline decorrelation and pixel misregistration decorrelation and so on, are analyzed, and the image correlation coefficient is deduced. Finally, the effect of image decorrelations to relative height accuracy is analyzed, the results indicate, for flat surface, noise decorrelation and pixel misregistration decorrelation are the main factors, and baseline decorrelation is the minor factor.

Key words [Distributed small satellites](#) [SAR Interferometry](#) [Relative height accuracy](#) [Decorrelation](#)

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