

应用

BIBASS: 基于星载SAR照射源的双站InSAR系统

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摘要:

本文简述了基于星载SAR照射源的双站InSAR系统(BIBASS)的优势和研究现状, 分析了BIBASS系统工作原理, 设计了BIBASS系统, 研究了BIBASS的工作方式, 深入分析了BIBASS信噪比、二维分辨力等系统性能以及去相关因子对测高的影响。最后, 基于TerraSAR-X照射源, 仿真分析了在大场景中BIBASS系统去相关因子的分布曲线, 得到了BIBASS系统的测高精度。论文研究表明, BIBASS具有系统简单、造价低廉的特点以及良好的分辨率和测高精度, 在测绘领域具有独特的技术优势和良好的应用前景。

关键词: 星载SAR; 双站InSAR; 去相关; 测高精度

BIBASS: Bistatic Interferometer Based on Spaceborne SAR

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Abstract:

BIBASS, abbreviated from the Bistatic Interferometer BASEd on Spaceborne SAR (BIBASS), using the existing spaceborne SAR systems as transmitters of opportunity, is an air-based or a ground-based multi-channels receiver for interferometric application. In this paper, the advantages as well as some research progress of BIBASS is overviewed firstly, and the principle of height measurement for BIBASS is analyzed. Then, BIBASS configuration, at system level, is presented, and some system parameters, such as Signal-to-Noise Ratio (SNR), 2-D resolution, relative height accuracy, of BIBASS are analyzed. At last, based on TerraSAR-X as the transmitter of opportunity, the de-coherence and relative height error of BIBASS are simulated and evaluated for a large scenery. It can be seen from the discussion in the paper that BIBASS is an innovative bistatic interferometric system with the advantages of simplicity, low-cost, high-resolution and high-height-accuracy for a large-scaled scene, and will be widely used in terrain survey in the future.

Keywords: Spaceborne SAR; Bistatic InSAR; De-coherence; Height error

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