

一种基于质量引导和最小不连续合成的InSAR相位解缠算法

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A Combined Phase Unwrapping Algorithm Based on Quality-guided and Minimum Discontinuity for InSAR

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摘要

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摘要 该文提出了一种质量引导和最小不连续相融合的InSAR相位展开算法。根据相位质量图将缠绕相位分割为高低质量区域, 高质量区域采用质量引导算法进行求解, 然后将每个解缠后的高质量相位块视为抽象相位点, 在低质量相位区域内部和抽象相位点之间进行最小不连续优化, 求解最终解缠相位。对真实InSAR数据的处理结果表明, 该算法可以有效克服质量引导算法和最小不连续算法中的误差传播, 保持高质量区域解缠相位的精度, 提高解缠效率。

关键词: InSAR 相位解缠 质量引导 最小不连续

Abstract: A two-dimensional phase unwrapping algorithm is proposed for InSAR based on quality-guided and minimum discontinuity. The wrapped phase is partitioned into high and low quality areas according to its quality map, and the quality-guided algorithm is used to retrieve the phase of the high quality areas. Then the unwrapped high quality areas are taken as abstract phase points, and the minimum discontinuity algorithm is performed in the interior of low quality areas and the abstract phase points to retrieve the final unwrapped phase. The experimental result performed on real InSAR data shows that the proposed approach overcomes the drawbacks of the quality-guided and minimum discontinuity algorithms which both tend to spread the errors, and has the advantages of keeping the accuracy of the unwrapped phase in the high quality areas and also improving efficiency.

Keywords: InSAR Phase unwrapping Quality-guided Minimum discontinuity

Received 2010-05-05;

本文基金:

国家863计划项目(2007AA091101)和国家自然科学基金(61072092)资助课题

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引用本文:

钟何平, 唐劲松, 张森. 一种基于质量引导和最小不连续合成的InSAR相位解缠算法[J] 电子与信息学报, 2011, V33(2): 369-374

Zhong He-Ping, Tang Jin-Song, Zhang Sen. A Combined Phase Unwrapping Algorithm Based on Quality-guided and Minimum Discontinuity for InSAR[J], 2011, V33(2): 369-374

链接本文:

<http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2010.00440> 或 <http://jeit.ie.ac.cn/CN/Y2011/V33/I2/369>

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