一种超大规模干涉图的相位展开方法

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摘要　　针对超大规模干涉图相位展开消耗计算机内存资源多和执行时间长的问题，提出了"分而治之"的方法. 将整个数据划分成可单独操作的子数据块，利用一致性好且误差传递较小的相位展开方法独立地展开每一子块;通过求解加权边缘连续的代价函数极值，对子块处理结果进行整体拼接;最后平滑内插非相干区域. 仿真和实测数据实验结果说明:该方法能够有效地解决超大规模干涉图的相位展开问题，且相对于整体处理仍然保持了较高的相位展开精度.

关键词　　最小加权不连续方法　网络流法　整体拼接　相位展开　干涉合成孔径雷达

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Phase unwrapping approach for extremely large interferograms

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Abstract

Phase unwrapping is not feasible for extremely large interferograms due to computation time and computer resources. Therefore, we propose a "divide-and-conquer" strategy: divide the whole interferogrm into some patches which are easy to deal with, unwrap each patch independently by using some classical phase unwrapping methods with the good congruence and smaller error propagation, piece all the patches unwrapped together by finding the solution to a minimum weighted continuity cost function and finally interpolate low-coherence areas. Experimental results, carried out on simulated and real data, show that the proposed approach is efficient for unwrapping extremely large interferograms and has not reduced much accuracy with respect to the processing as a whole.

Key words　minimum weighted discontinuity method　network-flow method　mosaic　phase unwrapping　interferometric SAR

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