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基于加权最优化模型的机载InSAR联合定标算法

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Joint Calibration of Airborne Interferometric SAR Data Using Weighted Optimization Method

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摘要 多个相邻场景同时进行干涉参数外定标的过程称为联合定标，联合定标能够保证相邻场景的高程衔接性，能够实现无控制点场景的干涉定标。该文提出了一种适用于机载InSAR系统的联合定标算法，该算法利用控制点和同名点信息，建立了关于待定标参数的约束方程组，并通过最优化的方法对其进行求解。同时依据各控制点和同名点处的相干系数、位置分布的不同，对各约束方程进行了加权，从而顾及到了不同质量和分布的控制点、同名点在联合定标中的权重差异。实测数据处理结果表明，该文算法优于传统的基于敏感度方程模型的联合定标算法。

关键词： 干涉合成孔径雷达   干涉定标   联合定标   同名点   加权最优化

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Abstract： Joint calibration is a method to calibrate interferometric parameters of several adjacent scenes simultaneously, which needs less Ground Control Points (GCPs) and can realize the elevation continuity among the adjacent scenes. As the biases of the parameters can be acquired by solving the equations of GCPs and Corresponding Points (CPs), this paper presents one such joint calibration method by solving the equations using weighted optimization method. And the weightings depend on the correlation coefficient and location of the GCPs and CPs. This method can improve the Digital Elevation Model (DEM) accuracy, and this paper illustrates its successful application to interferometric SAR data.

Keywords： Interferometric SAR   Interferometric calibration   Joint calibration   Corresponding points   Weighted optimization

引用本文：

毛永飞, 向茂生.基于加权最优化模型的机载InSAR联合定标算法[J] 电子与信息学报, 2011,V33(12): 2819-2824

Mao Yong-Fei, Xiang Mao-Sheng.Joint Calibration of Airborne Interferometric SAR Data Using Weighted Optimization Method[J] , 2011,V33(12): 2819-2824

链接本文：

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2011.00431   或   http://jeit.ie.ac.cn/CN/Y2011/V33/I12/2819