

光学计量与测试

星载InSAR基线矢量方位动态测量方法研究

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摘要:

星载InSAR干涉基线矢量方位角的测量精度对整个系统的测绘精度有着十分重要的影响。针对星载InSAR测量系统对其干涉基线矢量方位角的测量要求,给出了一种基于图像处理的CCD摄像测量方法。利用CCD摄像测量法对主副天线在平面内的相对位移进行了精确测量。分析了系统的理论误差,构建了完整的实验系统,并对光学靶标的固定步长位移进行验证性实验测量,实验结果与理论分析值具有较好的一致性,测量系统的测量精度优于 $1\sigma$ ,证明了该测量方法具有很好的可行性。

关键词: 测量相机 光学合作靶标 干涉基线矢量 靶标质心坐标

Azimuth angle measurement of space-borne InSAR interferometric baseline vector

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Abstract:

The accuracy of space-borne InSAR interferometric baseline vector azimuth angle measurement is very important for improving system mapping accuracy. To meet the measurement accuracy requirement of a space-borne InSAR interferometric baseline vector azimuth angle, an optical metrology camera based on image processing is presented, an integrity experiment system is constructed, and the system measurement accuracy is analyzed theoretically. An experiment for optical target assembly with fixed displacement is used to validate the theoretical analysis of the system. The experiment result agrees with the result in theory, the system with arc-seconds accuracy is realized. It proved this approach is feasible for the space-borne InSAR interferometric baseline vector azimuth angle measurement.

Keywords: metrology camera optical target assembly interferometric baseline vector target centroid coordinates

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