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## GPS 双基线载体姿态测量研究

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### ATTITUDE DETERMINATION WITH TWO BASELINES BASED ON GPS

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摘要

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**摘要** 研究了采用双基线方案测量载体的姿态, 利用GPS双差相位测量基线矢量, 双差伪距观测值辅助解相位整周模糊, 双频时引入空间变换缩小置信空间搜索次数, 通过实例分析得出了正确解算相位模糊与观测次数、伪距测量精度的关系, 并利用误差传播定律对姿态测量精度进行分析, 结合卫星星历数据计算表明, 在卫星运行周期内航向角和俯仰角平均测量精度在一定条件下优于2 mrad。

**关键词:** GPS 姿态测量 相位整周模糊 空间变换

**Abstract:** The rigid body's attitude determination is discussed using two baselines based on GPS; baseline vector coordinates are calculated with GPS double difference phases, and phase integer ambiguities are calculated with the aid of double difference pseudorange observables. By space transformation, the searching time of the integer ambiguity candidates in the confidence ellipsoid space can be reduced when dual frequency observables are available. Correctly resolving the integer ambiguities depends on the observed time and the observed pseudorange accuracy. Attitude precision is analyzed based on error propagation laws. Calculations with one periodic ephemerides data show that head or pitch precision level can reach about 2 mrad under certain conditions.

**Keywords:** GPS attitude determination phase integer ambiguity space transformation

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