

基于约束最小二乘的近空间雷达网定位算法

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Location Method of Near Space Radar Network Based on Regularized Constrained Total Least Square

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摘要

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摘要 该文研究了一种基于归一化约束最小二乘的近空间雷达网定位算法。首先将距离与角度信息的非线性方程转换为线性方程,通过一阶Taylor展开分析了噪声对线性方程的影响,然后将定位问题转化为归一化约束总体最小二乘问题,并通过Lagrange函数将其转换为无约束的优化问题,根据定位均方误差最小原则选取加权因子得到定位解,最后进行了定位误差分析,仿真结果表明了该算法的有效性。

关键词: 雷达网 归一化约束最小二乘 定位精度

Abstract: The regularized constrained total least square algorithm for near space radar network is discussed in this paper. Firstly the nonlinear equations about range and angle are transformed into linear equations. The influence of error is analyzed by expanding the true range and angle in a first-order Taylor series. Then the location issue is transformed into a regularized constrained total least square issue. The Lagrange function is used to transform the issue into a non-constrained issue. A proper weight is chosen by the least mean square error rule to obtain the location solution. Location accuracy is analyzed. Simulation results show the effectiveness of the algorithm.

Keywords: Radar network Regularized constrained total least square Location accuracy

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