

通信与网络

2D雷达组网几何定位融合算法

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摘要:

研究了两部2D雷达组网中的目标定位估计和定位精度问题。为考虑地球曲率对目标定位精度的影响,提出了两雷达站组网中基于实际地球椭球模型的几何交叉定位与数据融合相结合的方法,建立了两部雷达观测定位几何模型,推导了定位方程和精度估计公式并进行了误差分析。仿真分析表明,在选择更为实际的观测模型的前提下,利用几何定位与数据融合方法不但改善了两雷达的定位性能,而且根据定位几何精度因子(geometrical dilution of precision, GDOP)图的特点,选择相应的定位雷达,提高了雷达站组合的几何定位精度。

关键词: 2D雷达组网 几何交叉定位 数据融合估计 几何精度因子

Geometric locating fusion algorithm for 2D radar networking

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Abstract:

The problems of estimation and accuracy for target locating in the networking of two 2D radar stations are investigated. Considering the influence of the actual curvature of the earth on the accuracy of target locating, a geometric locating with data fusion algorithm based on the actual ellipsoidal earth model for the two 2D radar stations networking is presented; the observation model for two radar stations is designed; and the locating equations and expressions for accuracy estimation are calculated. In order to evaluate the algorithm, the computing cases are illustrated. It can be seen from these cases that the algorithm not only can improve locating accuracy, but also help to select the corresponding radars based on the geometrical dilution of precision (GDOP) charts to improve the accuracy of geometric locating.

Keywords: 2D radar networking geometric cross locating data fusion estimation geometrical dilution of precision (GDOP)

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