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星基ADS与雷达误差校准算法的研究

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Studies on Satellite-based ADS and Radar Registration Algorithm

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摘要 基于星基自动相关监视(ADS)系统和雷达各自的特点,分析了空中交通管制中ADS与雷达数据融合的模型,提出了在传统的地心地固(ECEF)坐标系中星基ADS和雷达系统误差校准的算法。同时,针对ADS数据的特性,又进一步提出了在Geodetic坐标系和以雷达站为极点的极坐标系(以下简称雷达站极坐标系)中的系统误差校准算法。最后,对校准效果进行了仿真分析和比较,并介绍了一种有效应用上述算法的方法。

关键词: 空中交通管制(ATC)　误差校准　自动相关监视(ADS)　雷达

Abstract： Based on the characteristics of the satellite-based automatic dependent surveillance (ADS)system and radar, the model of ADS and radar data fusion system are studied and the registration algorithm in the traditional Earth-Centered Earth-Fixed (ECEF)coordinate system is presented.In the meantime, according to the characteristics of ADS data, the registration algorithms in Geodetic coordinate system and radar polar coordinate system are further proposed.Simulated and real-life data are used to evaluate the performance of the proposed algorithms and comparisons are made.The effect way to better use the above algorithms in practical situations is introduced.

Keywords： air traffic control (ATC)　registration　automatic dependent surveillance (ADS)　radar

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