

传感器与信号处理

多机载平台多目标跟踪与辐射控制

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摘要:

针对作战飞机编队多目标跟踪中的辐射控制问题, 提出了一种多机多传感器协同多目标跟踪与辐射控制方法。该方法首先根据目标与我机编队之间的距离, 利用模糊逻辑设定不同目标的跟踪精度, 然后以目标跟踪精度为任务需求, 在时间上控制雷达辐射。建立了目标的威胁评估模型, 并根据目标相对我机的不同威胁度在空间上控制雷达辐射, 选择威胁度最小的一个或几个雷达辐射。同时, 利用多平台间的机载地理坐标系转换, 进行多平台序贯滤波, 实现传感器管理下的目标跟踪。仿真结果证明了方法的合理性和有效性, 研究结论有助于提高作战飞机编队的抗侦察和抗干扰能力, 从而提升整体的生存能力。

关键词: 多传感器信息融合; 辐射控制; 目标跟踪; 传感器管理

Multi-airborne-platform multi-target tracking and radiation control technology

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Abstract:

Aiming at the radiation control problem appearing in the multi-target tracking of aircraft formation, a method of multi-aircraft synergistic multi-target tracking and radar radiation control is proposed. Firstly the tracking accuracy of different targets are set up based on the distance of targets to our side formation using fuzzy logic, then the radars' radiation is controlled in time with the task requirement of target tracking accuracies. The target threat assessment model is set up, and the radars' radiation is controlled in space based on the different threat degrees of targets to our aircraft, the radar radiation with a minimum threat degree is selected. Meanwhile, an airborne geographical coordinate system transformation among multi-platforms is used for target tracking with multi-platform sequential filter. Simulation result proves the model' s effectualness. The research conclusion is helpful for enhancing the anti-reconnaissance and anti-jamming ability of the combat aircraft formation, thus upgrading the whole viability.

Keywords: multisensor information fusion radiation control target tracking sensor management

收稿日期 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-506X.2012.03.12

基金项目:

通讯作者:

作者简介:

作者Email:

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