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多导弹编队齐射攻击分散化协同制导方法

邹丽¹, 周锐¹, 丁全心²

1. 北京航空航天大学 控制一体化技术国家级科技重点实验室, 北京 100191 2. 洛阳电光设备研究所 火力控制技术国防科技重点实验室, 河南 洛阳 471009

Decentralized Cooperative Guidance for Multiple Missile Groups in Salvo Attack

ZOU Li¹, ZHOU Rui¹, ZHAO Shiyu²

1. National Key Laboratory of Science and Technology on Holistic Control, Beijing University of Aeronautics and Astronautics, Beijing 100191, China; 2. Key Laboratory of National Defense Science and Technology on Fire Control Technology, Luoyang Electro-optical Equipment Research Institute, Luoyang 471009, China

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摘要 针对多导弹编队齐射攻击在时间上的协同要求,将攻击时间可控制导律(ITCG)与一致性分散化协调算法相结合,提出一种多导弹编队齐射攻击的分散化协同制导方法。编队内各导弹采用相邻局部通信,编队之间则通过各编队通信拓扑生成树的根节点进行通信。设计了导弹编队内和编队间的分散化协调策略,实现多导弹编队齐射攻击的分散化协调。推导了攻击时间最优的集中式多导弹协同制导律,并将其与分散化协调策略相结合,设计了多导弹编队齐射攻击的分散化协同制导律。最后,通过仿真表明了该方法的有效性。

关键词: 导弹 协同制导 多导弹编队 分散化协同 分布式通信 齐射攻击

Abstract: A decentralized cooperative guidance law for multiple missile groups in salvo attack is proposed by integrating the impact-time-control guidance (ITCG) with decentralized consensus algorithms. The missiles within a group communicate by means of the nearest-neighbor topology, while communication between groups is implemented through the root nodes of the group topology spanning tree. The decentralized coordinated strategies among different missiles and groups are provided for the cooperative guidance of multiple missile groups in salvo attack. A centralized optimal impact-time-control guidance law for multiple missiles is developed. The decentralized cooperative guidance law for multiple missile groups in salvo attack is designed based on the centralized optimal impact-time-control guidance law and the decentralized coordinated strategies. Finally the effectiveness of the proposed method is demonstrated by simulation.

Keywords: missiles cooperative guidance multiple missile groups decentralized cooperation distributed communication salvo attack

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