

无人机/导弹集群作战协同控制与决策

申请人：

甄子洋 南京航空航天大学 zhenziyang@nuaa.edu.cn

摘要：

为在空战中取得更多的主动权，无人机的集群作战技术和导弹协同制导与控制技术成为了当今的研究热点，其潜在的应用价值，将引领全新的作战模式。因此本专题旨在展示无人机/导弹集群作战协同控制与智能决策的最新研究成果。

关键词：

集群作战、协同控制、智能决策

专题内容：

无人机集群行为是参考自然界中群居生物的群体行为衍生而来。多无人机集群，是由一定数量的无人机，在通信网络的框架下，实现任务规划、协同控制和智能决策等行为。多无人机集群作战则是依靠无人机大规模集群协同完成指定飞行任务，从而在多变复杂的战场环境中获得主动权。集群的研究核心是解决无人机间的协同问题，研究内容主要包括协同算法、通信拓扑和自主决策等关键技术。

导弹协同控制是将导弹整合成协同交互的作战群体，利用群体优势对敌方高价值目标或者防御网进行层次化、智能化和全面化的打击，提高自身的突防能力。其主要研究内容包括：导弹目标分配、协同制导与控制等关键技术。

本专题重点旨在围绕以无人机、导弹和智能体为代表的集群作战、协同控制与决策的相关原理与技术，汇集相关领域的前沿理论与工程应用方法。征稿主题范围包括但不限于：

- 多无人机集群作战
- 多无人机协同任务规划
- 协同作战
- 智能空战决策
- 多飞行器编队控制
- 武器目标分配
- 多导弹协同制导
- 导弹防御
- 导弹先进制导与控制

特申请设立无人机/导弹集群作战协同控制与决策大会特邀专题，作为国际制导导航与控制学术会议的特邀专题进行论文征集。

望批准！

Cooperative Control and Decision of UAV / Missile Swarm Operation

Organizers:

Prof. Ziyang Zhen

Nanjing University of Aeronautics and Astronautics

zhenziyang@nuaa.edu.cn

Abstract:

In order to gain more initiative in air combat, UAV swarm combat technology and missile coordinated guidance and control technology have become hot research topics today. And their potential application value will lead to a new combat mode. Therefore, this topic aims to show the latest research results of UAV / missile swarm combat cooperative control and intelligent decision-making.

Keywords:

Swarm Operation, Collaborative Control, Intelligent Decision-making

Theme:

UAV swarm behavior is derived from the behavior of gregarious creatures in nature. Multi-UAV swarm consist of a certain number of UAVs, which implement behavior such as mission planning, collaborative control, and intelligent decision-making within the framework of a communications network. Multi-UAVs swarm operations rely on large-scale cluster collaboration of UAVs to complete flight missions. Therefore, that swarm gains more initiative in a complex and complex battlefield environment. The problem of collaboration between UAVs is the core of swarm research. The research content mainly includes collaborative algorithms, communication topology, and intelligent decision-making.

Missile coordinated navigation and control's purpose is to integrate missiles into a cooperative and interactive combat group. Missile swarm using the group's advantages to carry out hierarchical, intelligent and comprehensive attacks on enemy high-value targets or defense networks, and improve their own penetration capabilities. Its main research content includes missile target allocation, cooperative guidance and control.

This invited session focuses on the principles and technologies related to swarm operations, cooperative control, and decision making represented by Multi-UAVs, missiles, and Multi-agents, collects the frontier theory and engineering application in relevant fields. The theme includes but is not limited to:

- Multi-UAVs swarm operation
- Multi-UAVs cooperative mission planning
- Cooperative engagement capability
- Intelligent air combat decision
- Multi-aircrafts formation control
- Weapon target allocation
- Multi-missile cooperative guidance

- Missile defense
- Missile advanced guidance and control

Herein, we suggest to organize an invited session about cooperative control and decision of UAV / missile swarm operation in ICGNC, 2020 conference.