

Invited Session Proposal for 2020 International Conference on Guidance,
Navigation and Control

**Autonomous/Collaborative and Interception Guidance for
Hypersonic Vehicles**

Organizers:

Prof. Yan Xiaodong, Northwestern Polytechnical University, yan804@nwpu.edu.cn

Dr. She Zhiyong, Beijing Aerospace Technology Institute, elegantzhiyong@163.com

A. Prof. Cai Guangbin, Rocket Force University of Engineering, cgb0712@163.com

Abstract:

Hypersonic vehicles are paid much attentions due to their flexible trajectories and high maneuverability. Traditional guidance theories and technology developed from the drag acceleration-based guidance for hypersonic vehicles are less of adaptiveness and intelligence, therefore, may not be effective for the complicated missions, especially aiming at the maneuvering targets. Moreover, collaborative guidance among multi-vehicles also is important for the future mission. This session is proposed to share the theories and technology of the autonomous and collaborative guidance for hypersonic vehicles. The subjects of the session include but are not limited to the followings:

- Onboard mission planning methods aiming stationary and maneuvering targets.
- Multi-constraints autonomous/collaborative guidance methods for gliding flight.
- Atmospheric maneuvering and penetration autonomous/collaborative guidance.
- Thrust-glide-thrust multiphase trajectory planning and guidance.
- Long range maneuvering guidance for air-breathing hypersonic vehicles.
- Collaborative guidance and mission planning for multi-hypersonic vehicles.
- Trajectory tracking and interception guidance for hypersonic targets.

Keywords: Hypersonic vehicles, air-breathing hypersonic vehicles, Autonomous Guidance, Collaborative Guidance, Interception Guidance

高速机动飞行器自主制导、协同制导与防御拦截

组织者：

闫晓东，教授，西北工业大学，yan804@nwpu.edu.cn

余智勇，研究员，北京空天技术研究所，elegantzhiyong@163.com

蔡光斌，副教授，火箭军工程大学，cgb0712@163.com

简介：

以机动弹头、助推滑翔和吸气式高超声速飞行器为代表的高速机动飞行器是未来战略威慑和远程打击的重要手段，近年来受到各军事大国的高度重视。可以预见，未来高速机动武器必将在战争中发挥越来越重要的作用。

当前的高速机动飞行器制导方法一直沿袭传统的阻力加速度制导方法，存在着离线设计工作量大、在线自主性差、任务适应性差的问题，制约着高速机动飞行器的实战化应用。特别是随着对抗手段的快速发展，采用多飞行器协同的方式提高突防概率，并具备“侦打评”一体化的协同能力也是未来该类飞行器所必须具备的能力。因此，发展高速机动飞行器的在线任务规划、自主制导技术以及协同制导技术具有重要意义。此外，如何防御高速机动飞行器、高速机动飞行器的轨迹跟踪与拦截制导方法也是

本专题重点围绕以下研究方向征集稿件：

- (1) 面向固定和机动目标的高速机动飞行器的任务规划方法；
- (2) 多约束再入滑翔自主制导技术和方法；
- (3) 大气层内机动突防自主制导技术和方法；
- (4) 推-滑-推多飞行段轨迹规划与制导方法；
- (5) 吸气式高超声速飞行器大范围机动制导方法；
- (6) 多机动飞行器的协同任务规划与制导、协同效能评估方法；
- (7) 高速机动目标的轨迹跟踪理论与方法；
- (8) 高速机动目标的防御拦截制导方法。

关键词：高速机动飞行器，吸气式飞行器，自主制导，协同制导，突防，轨迹跟踪，防御拦截