APISAT 2019

2019 ASIA PACIFIC INTERNATIONAL SYMPOSIUM ON AEROSPACE TECHNOLOGY

SURFERS PARADISE MARRIOTT RESORT,
GOLD COAST
4 – 6 DECEMBER 2019

ENGINEERS AUSTRALIA

Safety Analysis of UAV Built-in Aerial Launch

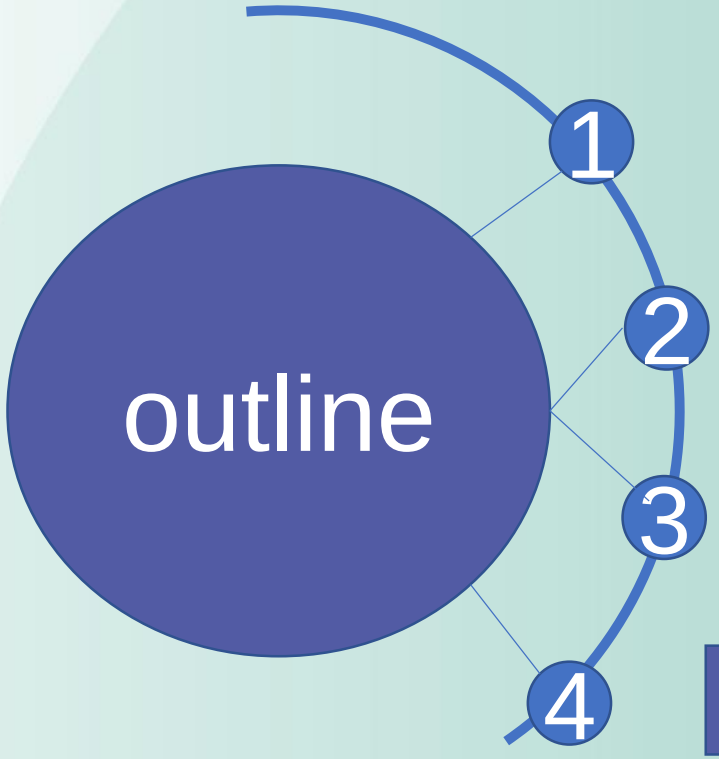
ZHANG-Shaojiang

Northwestern Polytechnical University

ENGINEERS AUSTRALIA

ROYAL AERONAUTICAL SOCIETY
AUSTRALIAN DIVISION

APISAT 2019



Introduction

Route

Process

Conclusion and Prospect

ENGINEERS AUSTRALIA

ROYAL AERONAUTICAL SOCIETY
AUSTRALIAN DIVISION

1 Introduction

1.1 Research Background

Land Launch

Sea Based Launch

Air LAUNCH

1.2 Raise Questions

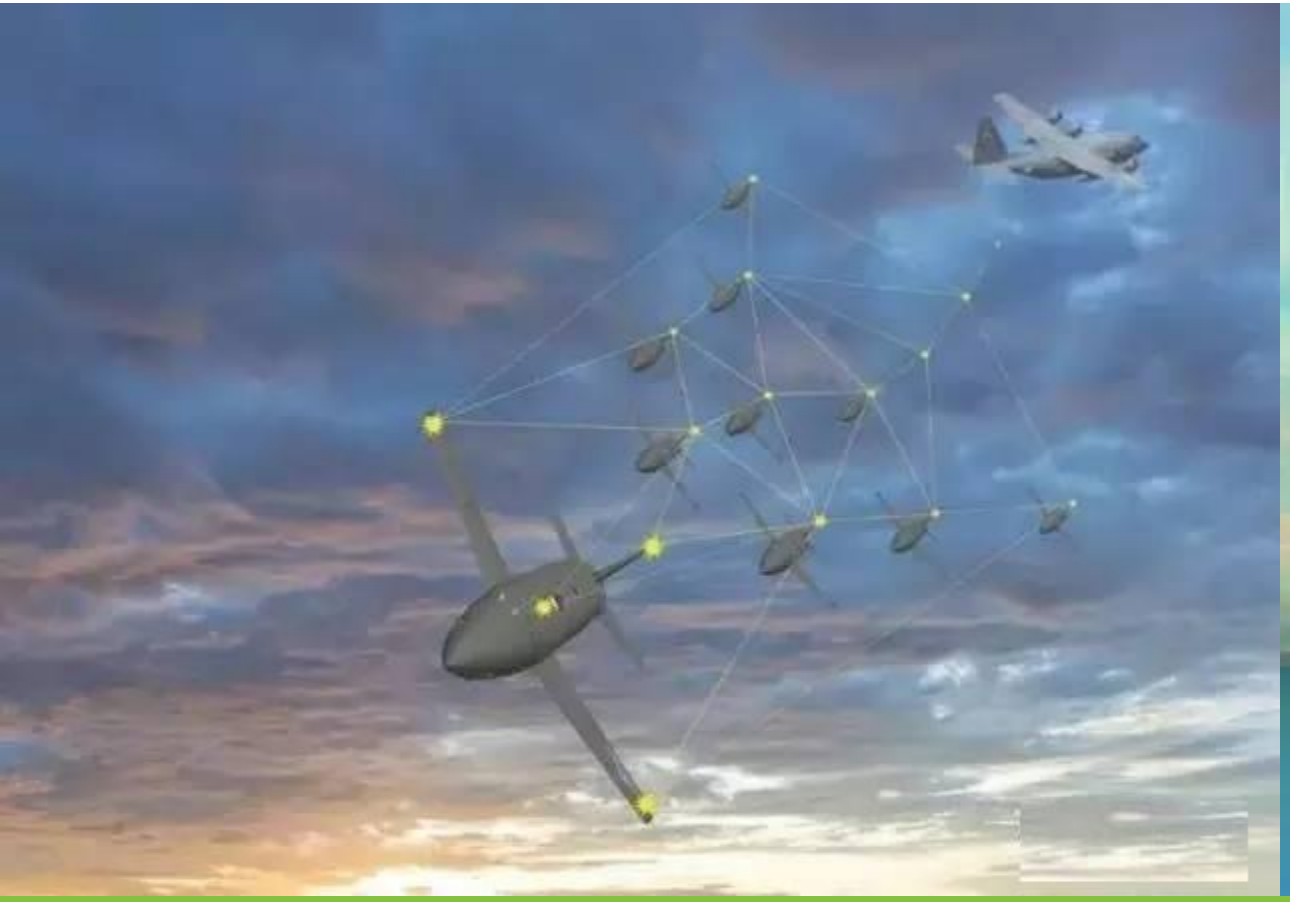
- 1 Can transport aircraft be used as launch carrier ?
- 2 Can cargo hold be used as launch carrier ?
- 3 Can multiple UAVs be launched ?

1.3 Research Value

- 1 Expand the operational radius of UAV.
- 2 Improve overall operational efficiency.
- 3 Safeguarding Homeland Security.

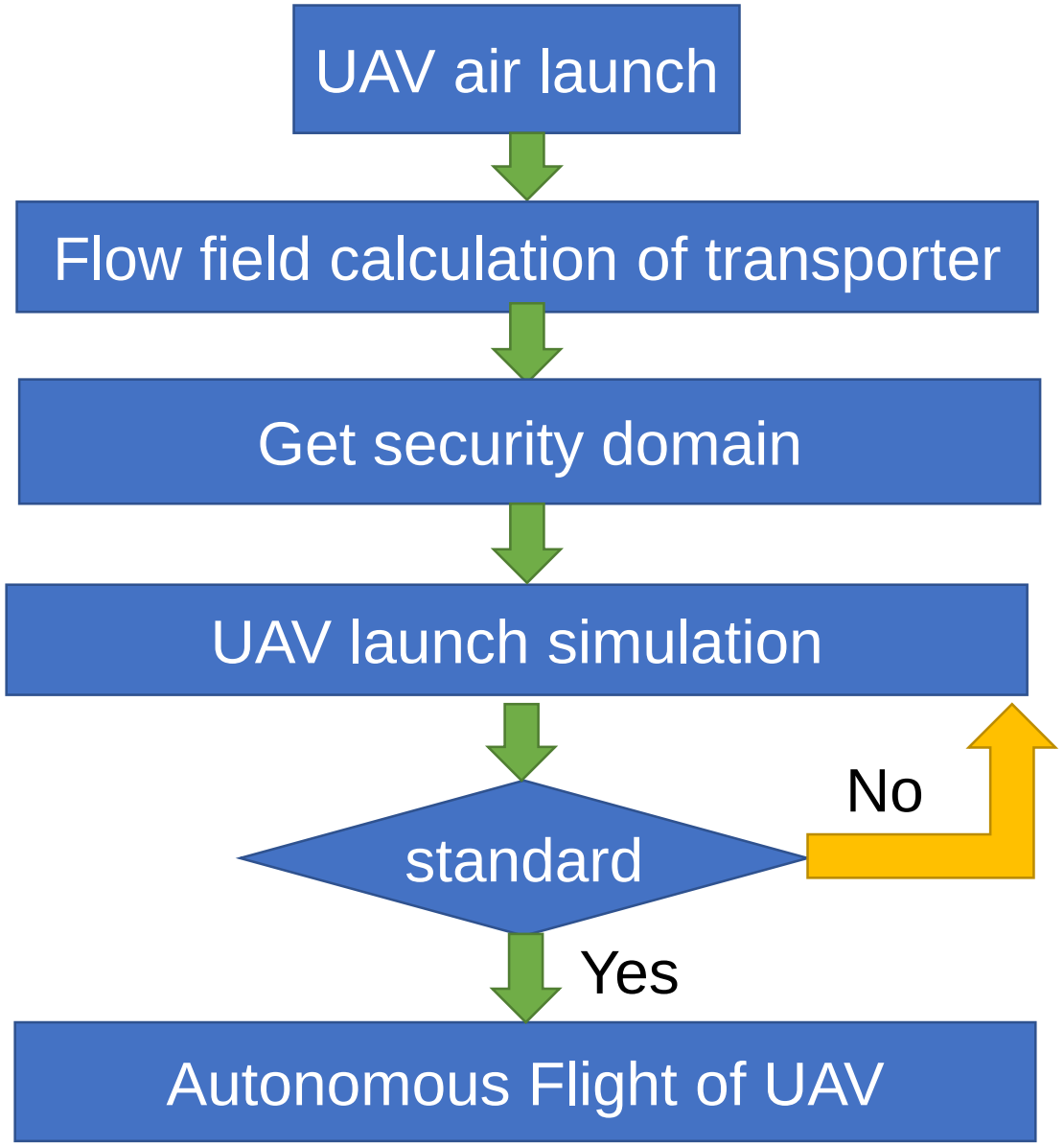
1.4 Peer study overview

- USA Gremlins Project



2 Route

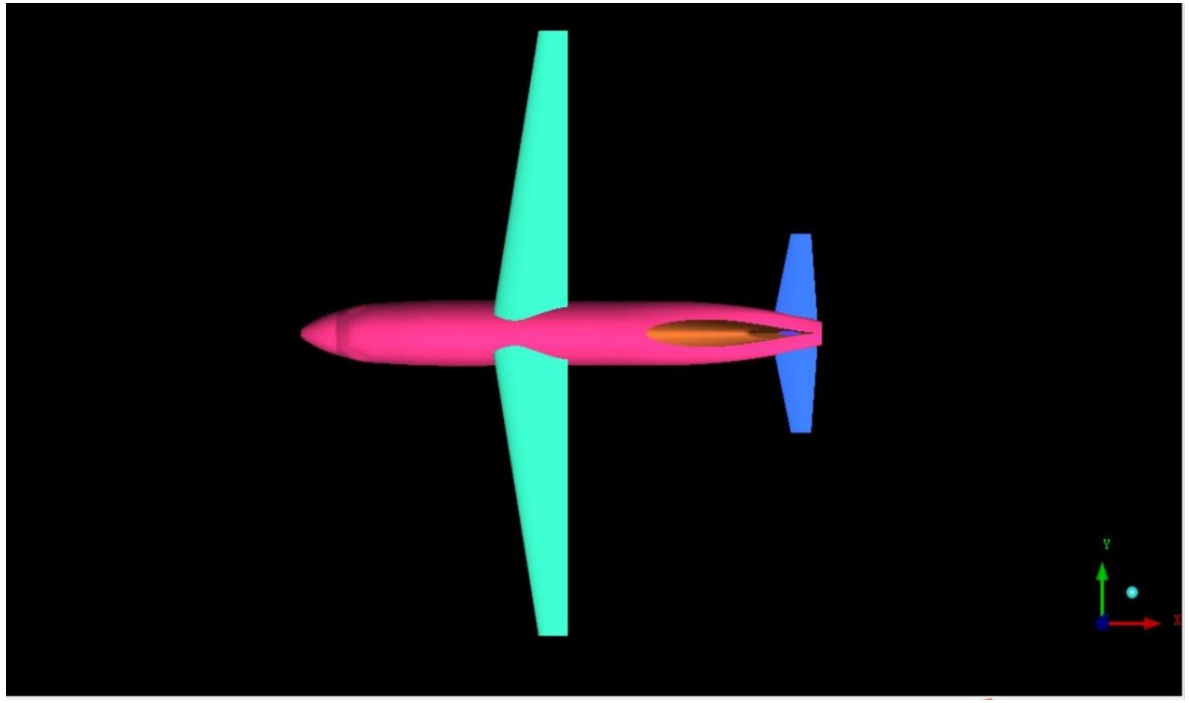
Research Train Of Thought

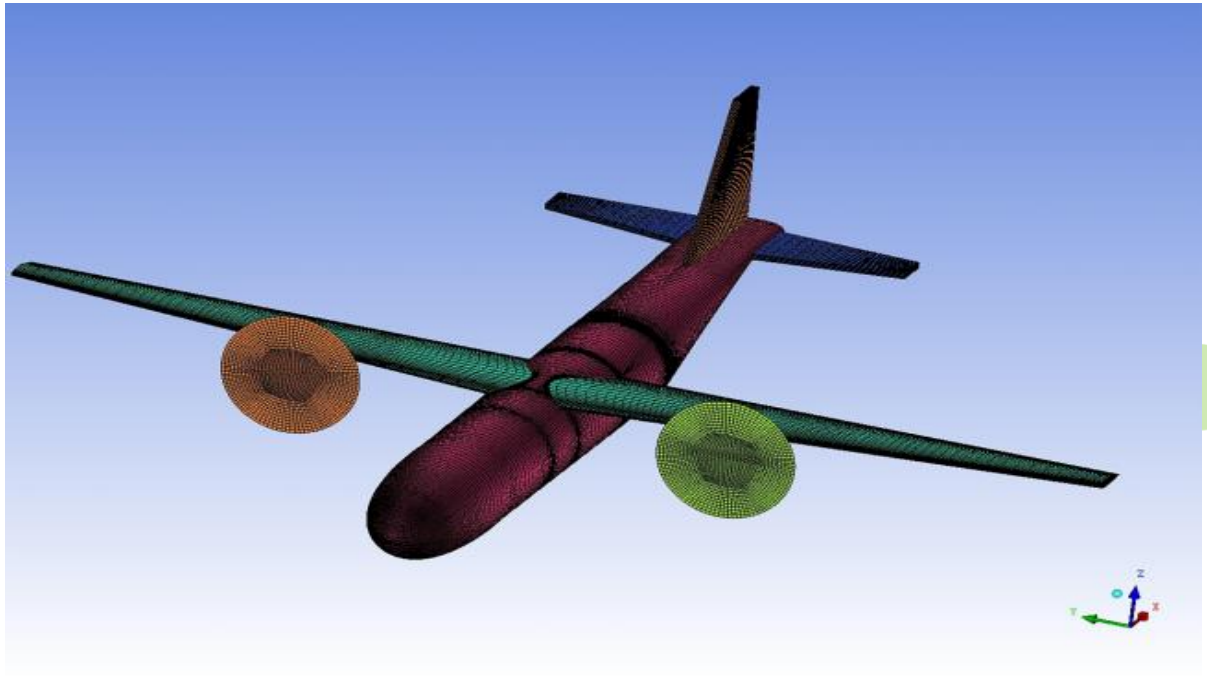


APISAT 2019

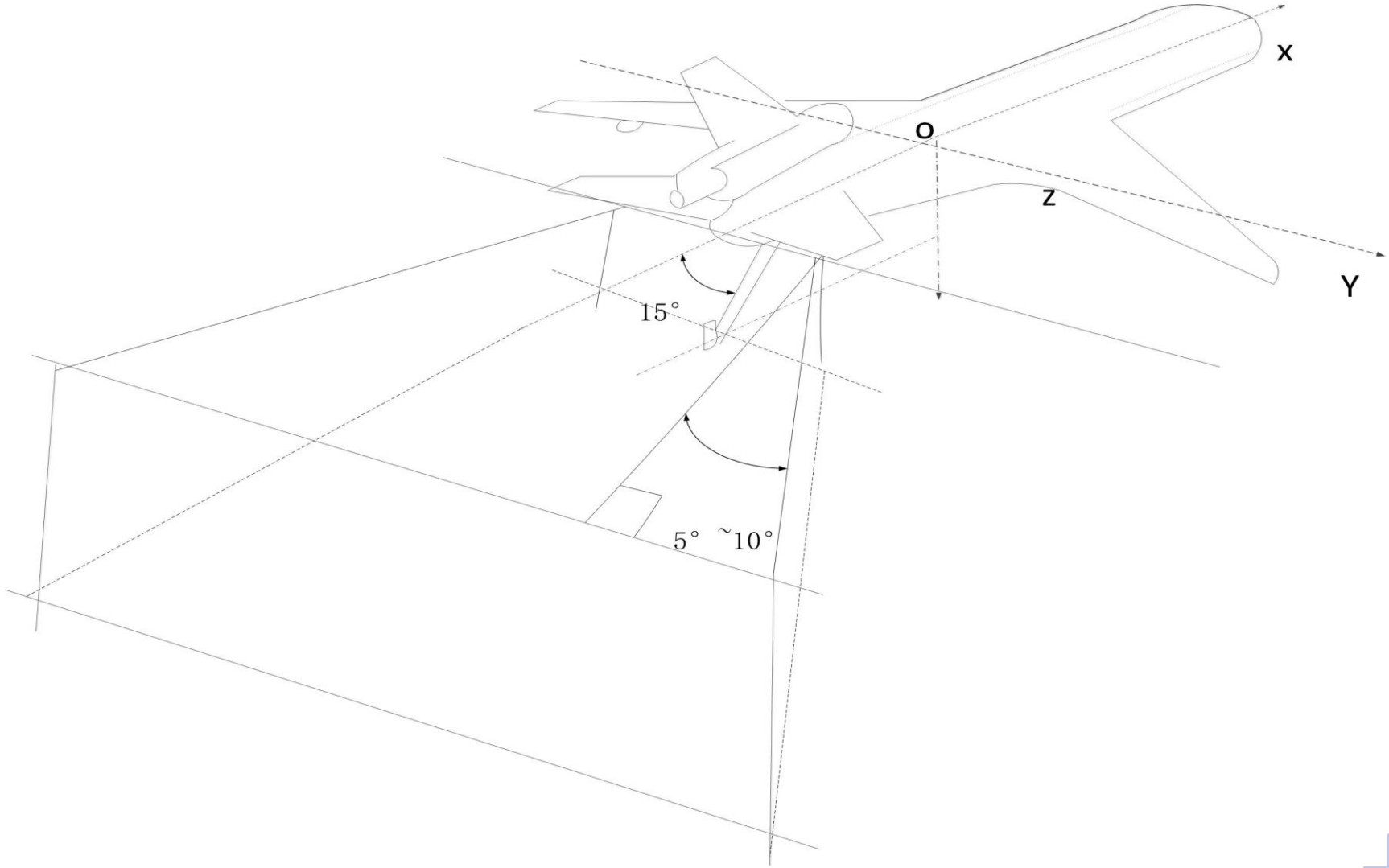
3 Process

3.1 Flow field calculation of transporter

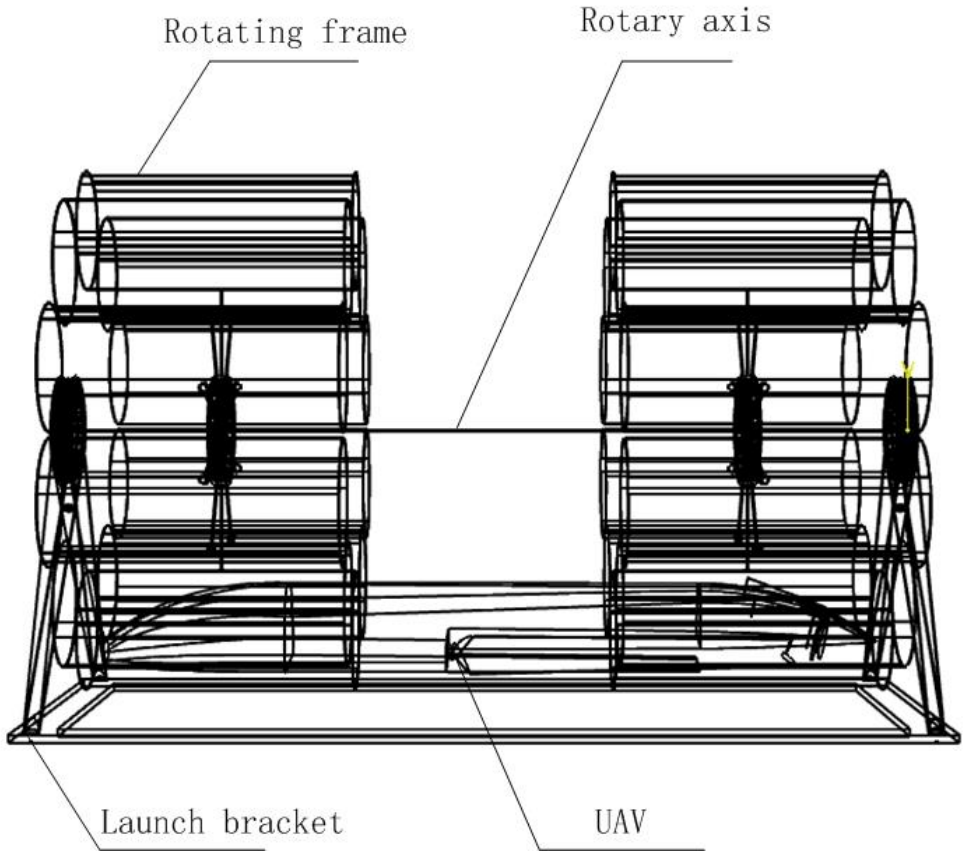


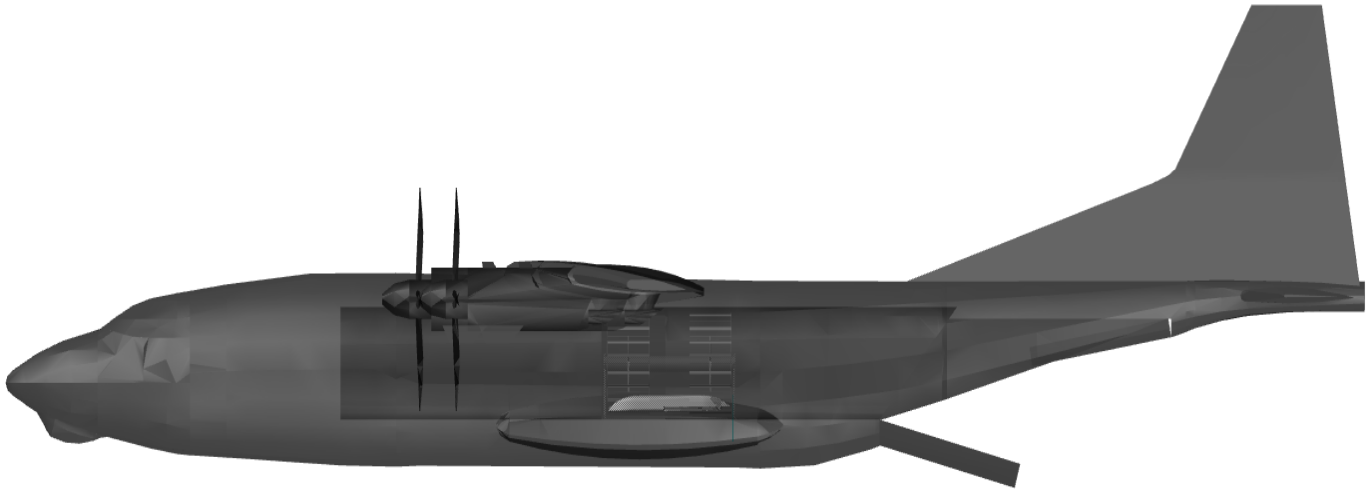


3.1 Flow field calculation of transporter

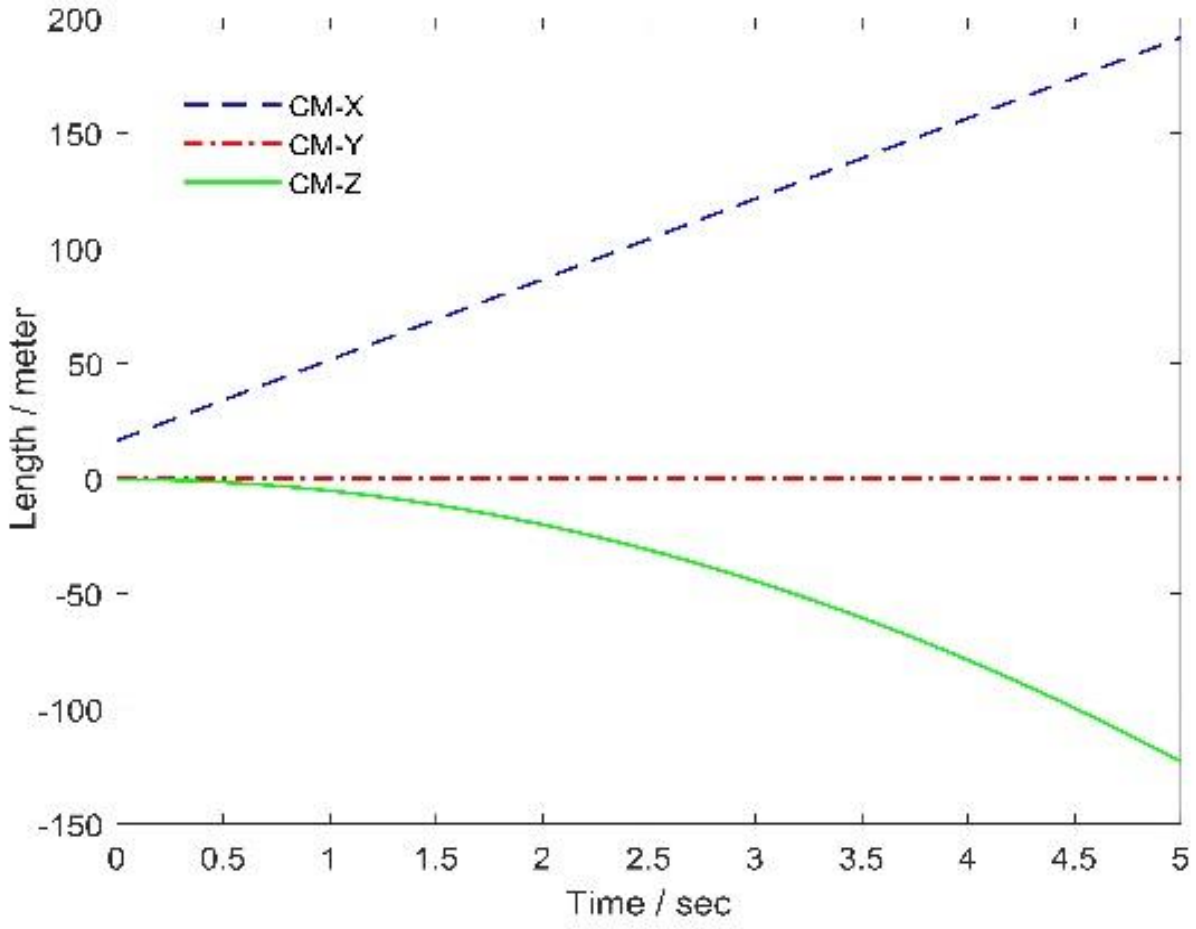


3.2 Launch Model

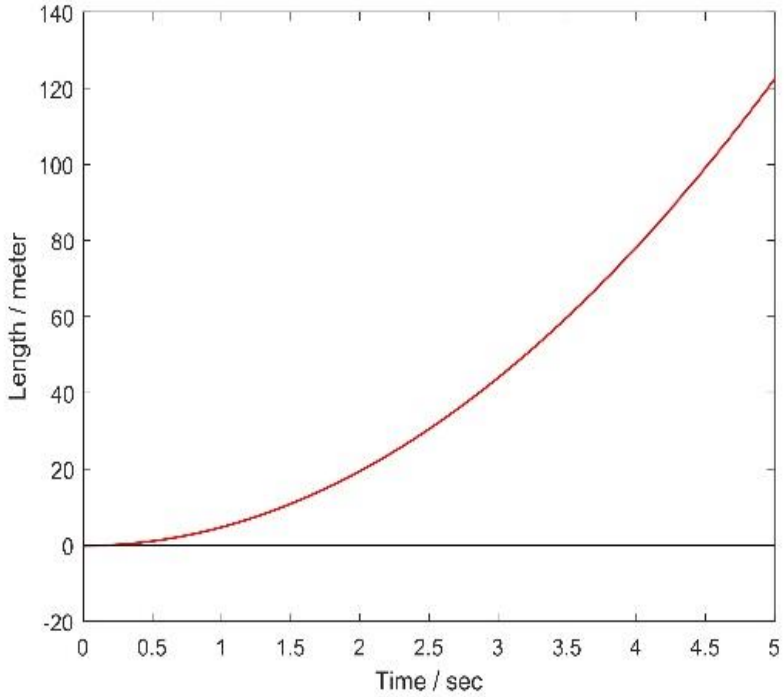




3.3 Result



UAV centroid displacement curve.



Vertical distance curve of the nose to the cargo compartment deck of the UAV head.

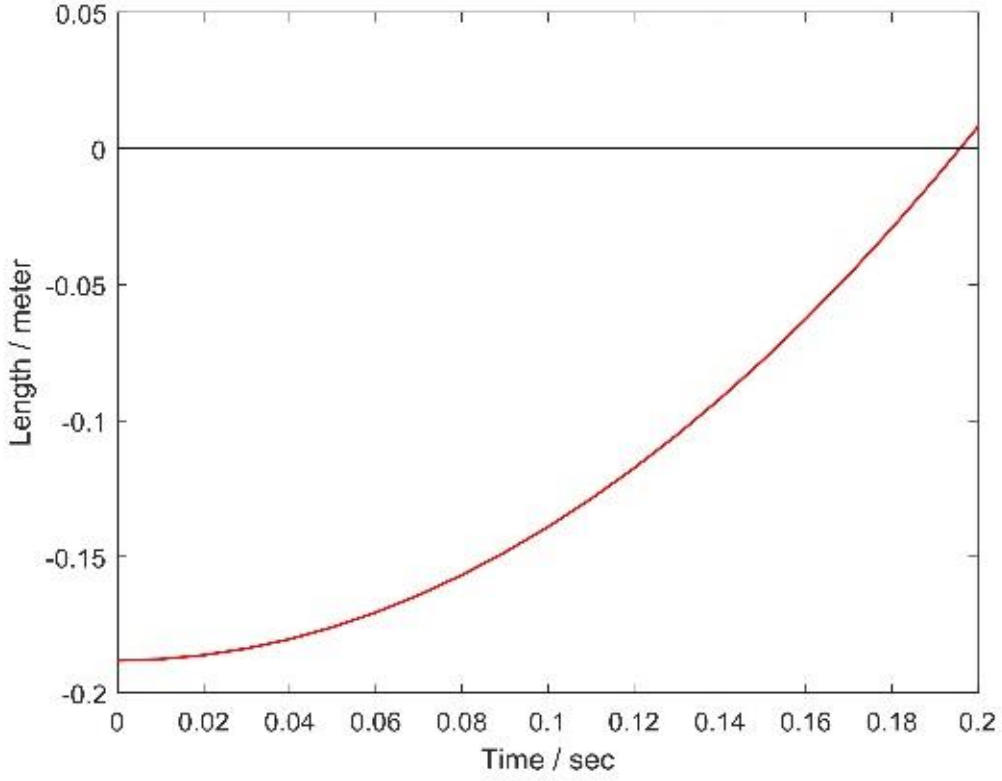


Figure Left Details of the previous 0.2s

4 Conclusion and Prospect

4 Conclusion and Prospect

1) This type of launch with a revolver-like revolver is feasible, and this intermittent launch mode is feasible;

2) The built-in UAV air launching scheme designed in this paper is reliable. In this scheme, the UAV and the carrier type can be safely separated;

3) This kind of scheme provides a certain theoretical basis for the feasibility demonstration of the overall scheme of airborne UAV/bee colony UAVs such as large transport aircraft/fighters.

APISAT 2019

THANK YOU!

ENGINEERS AUSTRALIA

ROYAL AERONAUTICAL SOCIETY
AUSTRALIAN DIVISION