

## Aerodynamic Characteristics Improvement of Quad Tilt Wing VTOL Plane

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Subject Category: Aeronautical Technology

URL: <https://www.jss.jaxa.jp/en/ar/e2018/9064/>

### ● Responsible Representative

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### ● Members

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### ● Abstract

Aerodynamic characteristics improvement of Quad Tilt Wing VTOL plane in cruise.

Ref. URL: <http://www.aero.jaxa.jp/eng/research/frontier/vtol/qtw/>

### ● Reasons for using JSS2

It takes a lot of time to calculate using workstation.

### ● Achievements of the Year

Aerodynamic interference reduction method was studied from forward wing to backward wing of tandem wing using FaSTAR.

### ● Publications

- Oral Presentations

1. Y. Aoki, K. Muraoka, "Aerodynamic Characteristics of Ellipse Wing in Flow with Flow Deflection Angle Distribution", Proceedings of the 50th Fluid Dynamics Conference / the 36th Aerospace Numerical Simulation Symposium, 2018
2. Y. Aoki, K. Muraoka, "Aerodynamic Characteristics of Tandem Bi-Plane for Quad Tilt Wing Aircraft", Proceedings of the 56th Aircraft Symposium, 2018
3. Y. Aoki, K. Muraoka, "Forward Wing Tip Design for Induced Drag Reduction of Quad Tilt Wing VTOL Unmanned Plane in Cruise", AIAA Science and Technology Forum and Exposition, 2019

● Usage of JSS2

● Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	320
Elapsed Time per Case	10 Hour (s)

● Resources Used

Fraction of Usage in Total Resources\*1 (%): 0.02

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2 (%)
SORA-MA	182,839.56	0.02
SORA-PP	345.84	0.00
SORA-LM	307.76	0.14
SORA-TPP	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2 (%)
/home	35.76	0.04
/data	596.05	0.01
/ltmp	244.14	0.02

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage*2 (%)
J-SPACE	0.07	0.00

\*1: Fraction of Usage in Total Resources: Weighted average of three resource types (Computing, File System, and Archiver).

\*2: Fraction of Usage: Percentage of usage relative to each resource used in one year.