

## Research on aircraft cabin noise reduction

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### ● Abstract

This research focuses on the development of our cabin noise prediction tool using the Finite-Difference Time-Domain method, and in-flight noise measurement in the JAXA's Jet-Flying Test Bed (FTB) "HISHO" with the aim of grasping the cabin noise characteristics.

### ● Reasons and benefits of using JAXA Supercomputer System

JSS was used to conduct the simulation of our cabin noise prediction method (FDTD), which needs the resource of JSS to deal with a large computational domain.

### ● Achievements of the Year

The vibration control device designed through analysis was constructed from metal for practical use. This vibration control device was used in a wind tunnel test simulating the conditions of an actual aircraft, and vibration control and sound insulation effects were obtained in the designed frequency band. An analysis was performed simulating this test, and the vibration characteristics were quantitatively reproduced. Furthermore, an analysis was performed simulating the flight conditions of an actual aircraft, and the vibration control and sound insulation effects of the vibration control device were confirmed.

### ● Publications

N/A

- **Usage of JSS**

- **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	27
Elapsed Time per Case	4.13 Hour(s)

- **JSS3 Resources Used**

Fraction of Usage in Total Resources\*1(%): 0.00

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage*2(%)
TOKI-SORA	0.75	0.00
TOKI-ST	5,244.85	0.01
TOKI-GP	0.00	0.00
TOKI-XM	0.00	0.00
TOKI-LM	0.00	0.00
TOKI-TST	0.00	0.00
TOKI-TGP	0.00	0.00
TOKI-TLM	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage* <sup>2</sup> (%)
/home	81.67	0.06
/data and /data2	5,103.33	0.02
/ssd	0.00	0.00

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage* <sup>2</sup> (%)
J-SPACE	0.00	0.00

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

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

#### ● ISV Software Licenses Used

ISV Software Licenses Resources		
	ISV Software Licenses Used (Hours)	Fraction of Usage* <sup>2</sup> (%)
ISV Software Licenses (Total)	0.84	0.00

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