

**high-fidelity analysis tools development for aerodynamic cascade design
/ Unsteady analyses of Compressor**

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● **Abstract**

It contributes to the design of jet engines by improving the accuracy of stall point prediction in numerical analysis in multi-stage compressor blade rows.

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

The unsteady analyses of a multi-stage compressor will be very large for satisfactory results. So we can not be calculated in a realistic time using anything other than JSS.

● **Achievements of the Year**

Full annulus unsteady analysis was performed to simulate a rotating stall in the compressor blade row.

- **Publications**

N/A

- **Usage of JSS**

- **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	28 - 1152
Elapsed Time per Case	320 Hour(s)

- **JSS3 Resources Used**

Fraction of Usage in Total Resources*1(%): 1.55

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage*2(%)
TOKI-SORA	10,970,737.49	0.53
TOKI-ST	7,504,940.60	9.24
TOKI-GP	0.00	0.00
TOKI-XM	0.00	0.00
TOKI-LM	86.68	0.01
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*2(%)
/home	18.07	0.02
/data and /data2	17,346.82	0.19
/ssd	461.59	0.12

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage*2(%)
J-SPACE	5.51	0.04

*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.

● **ISV Software Licenses Used**

ISV Software Licenses Resources		
	ISV Software Licenses Used (Hours)	Fraction of Usage*2(%)
ISV Software Licenses (Total)	508.61	0.36

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