Advanced simulation of internal flow in rotating machinery

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● **Abstract**

In order to improve the accuracy of predicting the aerodynamic performance of the rotating machine by numerical simulation, comparison with known data will be performed.

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

Since large-scale analysis will be performed to verify the LES analysis, this cannot be performed without JSS.

● **Achievements of the Year**

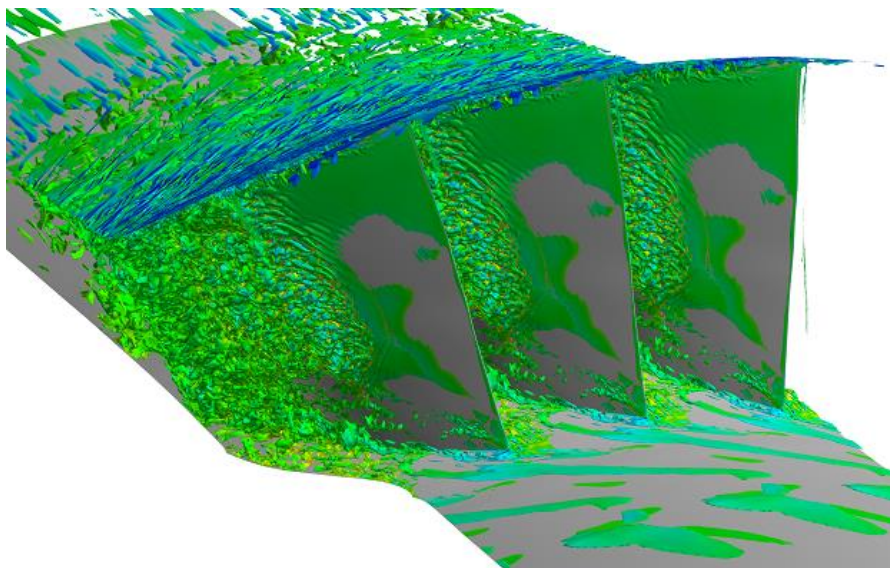Verifications of numerical analyses by LES were performed for Rotor37.

Fig. 1: Iso Surface of Q value (Rotor37)

🔵 **Publications**

N/A

🔵 **Usage of JSS**

● **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	OpenMP
Number of Processes	152 - 544
Elapsed Time per Case	1440 Hour(s)

● **JSS3 Resources Used**

Fraction of Usage in Total Resources[*1](%): 0.74

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage[*2](%)
TOKI-SORA	20,024,171.05	0.90
TOKI-ST	0.00	0.00
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[2] (%)
/home	32.89	0.03
/data and /data2	11,188.08	0.07
/ssd	579.23	0.05

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage[2] (%)
J-SPACE	15.01	0.05

[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)	35.55	0.02

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