

Advanced heat-resistant composite technology/film cooling for aircraft engines

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● Responsible Representative

Atsushi Kanda, Aviation Technology Directorate, Aviation Safety Innovation Hub

● Contact Information

Junichi Kazawa, Aviation Technology Directorate, Aviation Safety Innovation Hub(kazawa.junichi@jaxa.jp)

● Members

Yasuo Horiguchi, Susumu Kato

● Abstract

The predictive accuracy of numerical analysis on turbine cooling will be understood and used to evaluate actual components in jetengine in the material development.

● Reasons and benefits of using JAXA Supercomputer System

Since the verification analysis requires a lot of number of cases and requires LES analysis, the calculation scale is large and these analyses can only be performed using JSS3.

● Achievements of the Year

Verification was performed using RANS with test data, and it was confirmed that the Mach number distribution on the blade surface was in good agreement with the test results. It was also confirmed that LES analysis of the blade row can be performed.

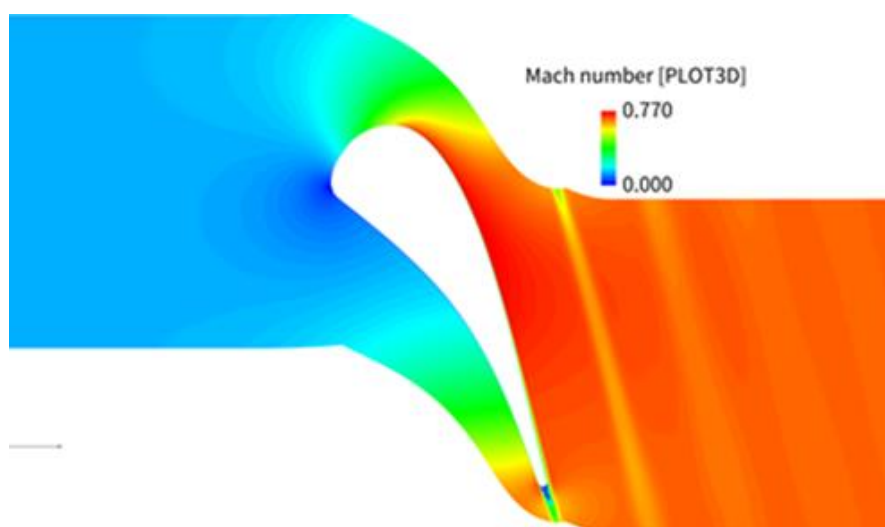


Fig. 1: Mach number contours

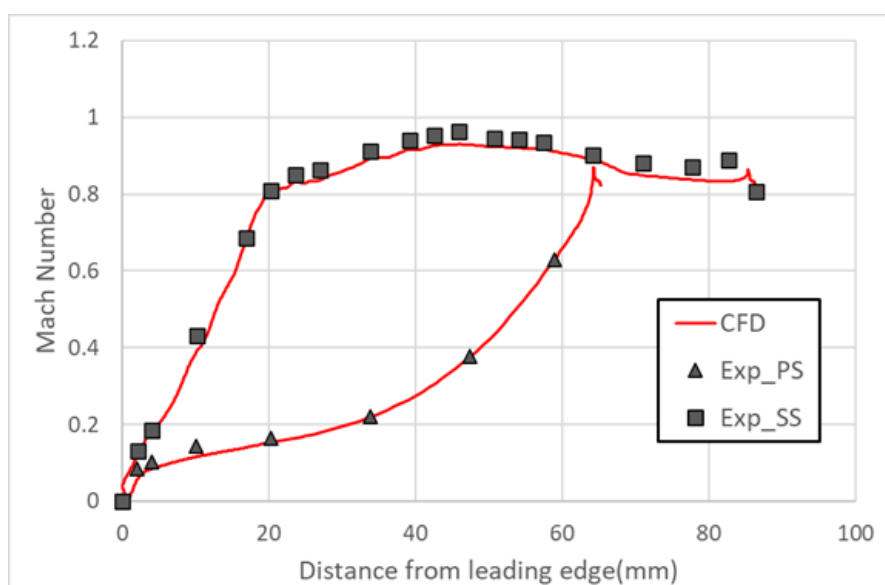


Fig. 2: Mach number distribution on the blade surface

● Publications

N/A

● Usage of JSS

● Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	90 - 870
Elapsed Time per Case	16 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	0.00	0.00
TOKI-ST	26,145.27	0.03
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	49.67	0.03
/data and /data2	6,440.67	0.03
/ssd	0.00	0.00

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

- **ISV Software Licenses Used**

ISV Software Licenses Resources		
	ISV Software Licenses Used (Hours)	Fraction of Usage ^{*2} (%)
ISV Software Licenses (Total)	30.68	0.02

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