Research and development of applied fundamental technology

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● Abstract

In this research, we develop a common fundamental aerodynamic analysis tool by extending FaSTAR-code to be able to handle fluid-structure interaction problems aimed for establishing the technical basis which accelerate the development of civil airplanes.

http://www.aero.jaxa.jp/eng/research/basic/application/

● Reasons for using of JSS2

JSS is necessary to complete numerical simulations of unsteady phenomenon and understand it in short time span .

● Achievements of the Year

For the bechmarking of our aeroelastic analysis code, we computed flutter boundaries on AGARD wing (Fig.1). The computed flutter boundaries (Fig.2) are close to the experimental data and NASA's FUN3D results.
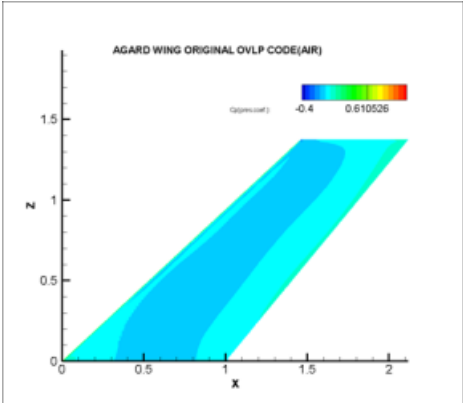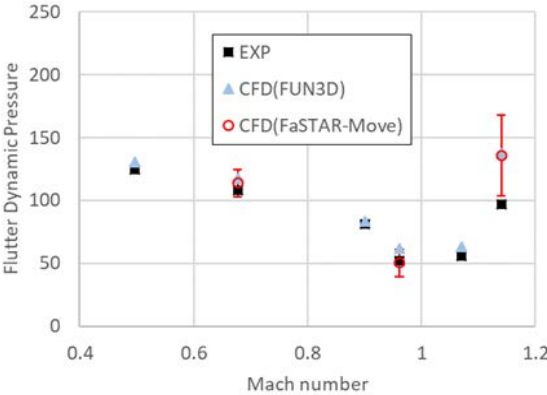
Fig.1 AGARD wing

Fig.2 Comaprison of flutter boudaries

● **Publications**

N/A

🔵 Usage of JSS2

● Computational Information

Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	1024
Elapsed Time per Case	48.00 hours

● Resources Used

Fraction of Usage in Total Resources*1 (%): 0.40

Details

Computing Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2 (%)
SORA-MA	2,594,985.60	0.34
SORA-PP	107,058.28	1.34
SORA-LM	495.88	0.26
SORA-TPP	0.00	0.00

File System Resources		
File System Name	Storage assigned(GiB)	Fraction of Usage*2 (%)
/home	326.23	0.23
/data	24,172.38	0.45
/ltmp	4,515.98	0.34

Archiver Resources		
Archiver System Name	Storage used(TiB)	Fraction of Usage*2 (%)
J-SPACE	2.26	0.10

*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