

Numerical Analysis of aerodynamic characteristics on H3 launch vehicle

Report Number: R18EK2300

Subject Category: Space Technology

URL: <https://www.jss.jaxa.jp/en/ar/e2018/9150/>

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● Abstract

Develop a transportation system that achieves low cost and high performance in order to strengthen international competitiveness.

● Reasons for using JSS2

The shortening of analysis time by the use of a supercomputer makes it possible to carry out feedback to system study timely, which greatly contributes to the improvement of design accuracy.

● Achievements of the Year

An initial study was conducted to apply a fairing with a diameter of 5.4 m, and the feasibility was confirmed.



Fig. 1: H3 model

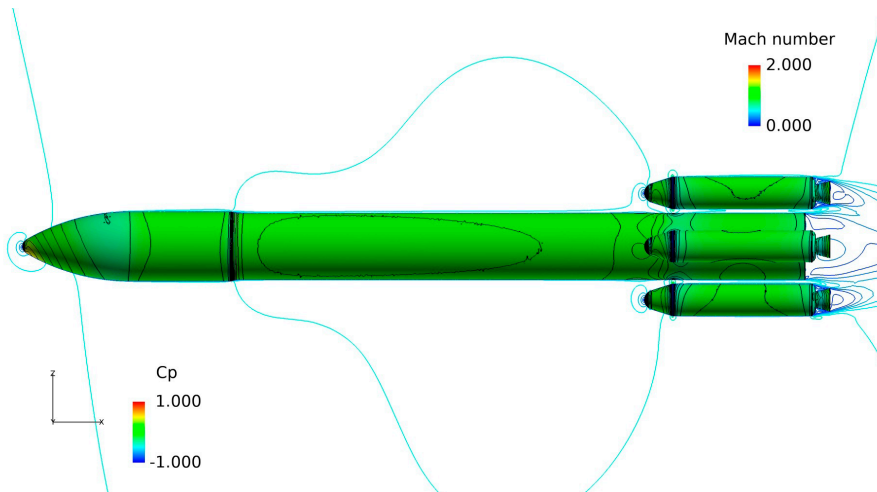


Fig. 2: Cp (M = 0.6 a=5deg)

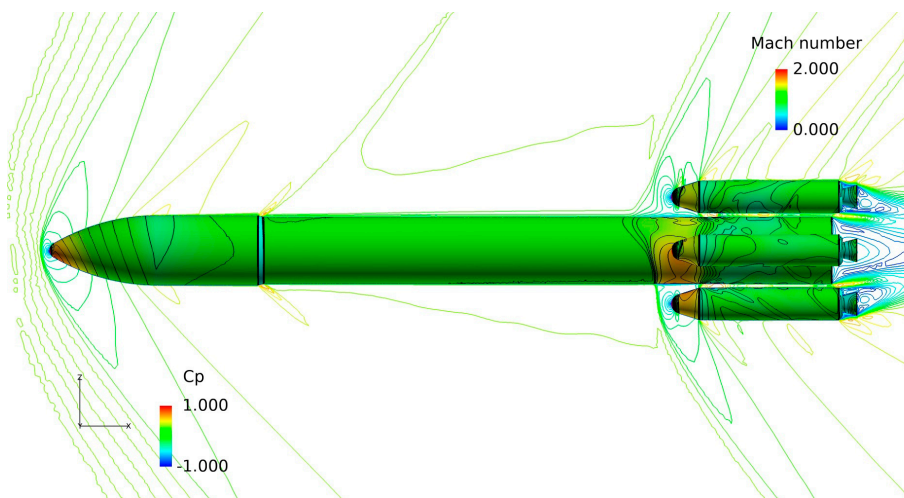


Fig. 3: Cp (M = 1.3 a=5deg)

● **Publications**

N/A

● **Usage of JSS2**

● **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	Automatic Parallelization
Number of Processes	480 - 960
Elapsed Time per Case	5 Hour (s)

● **Resources Used**

Fraction of Usage in Total Resources*1 (%): 0.21

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2 (%)
SORA-MA	1,852,488.80	0.23
SORA-PP	827.21	0.01
SORA-LM	63.76	0.03
SORA-TPP	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2 (%)
/home	257.81	0.27
/data	10,234.20	0.18
/tmp	4,947.92	0.42

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage*2 (%)
J-SPACE	0.50	0.02

*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.