

## Three-dimensional MHD simulation of the solar wind acceleration

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Subject Category: JSS2 Inter-University Research

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### ● Abstract

To reveal the physical mechanism of the heating and acceleration of the solar wind, we have conducted for the first time a three-dimensional MHD simulation of the solar wind.

### ● Reasons for using JSS2

We need a large amount of calculation resource to debug and to improve the parallelization efficiency. JSS2 is used for code development and test calculation.

### ● Achievements of the Year

We have developed a numerical code for three-dimensional MHD model of the solar wind including the divergence B cleaning and a new solver for fast thermal conduction. It took a long time to debug and to stabilize the code. We have run the code with another super computer and succeeded in simulating the solar wind for the first time.

### ● Publications

N/A

### ● Usage of JSS2

#### ● Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	8 - 3200
Elapsed Time per Case	4 Hour (s)

● **Resources Used**

Fraction of Usage in Total Resources\*1 (%): 0.00

Details

Computational Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2 (%)
SORA-MA	223.50	0.00
SORA-PP	0.00	0.00
SORA-LM	0.00	0.00
SORA-TPP	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2 (%)
/home	12.72	0.01
/data	127.16	0.00
/tmp	2,604.17	0.22

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.