Research on Space Exploration Technology (Research on Radiation Protection Technology)

● **Responsible Representative**

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● **Abstract**

This resarch aims to obtain the radiation protection technologies for future international space exploraion.

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

JAXA super computer system was used for the fast simulation calculations using Particle and Heavy Ion Transport code System (PHITS).

● **Achievements of the Year**

To evaluate doses on the D-Space dosimeter installed on the OMOTENASHI, the geometries were prepared for both OMOTENASHI and D-Space, and the doses at the Si sensors placing inside the dosimeter were calculated under the isotropic irradiation of galactic cosmic rays (GCRs). In the calculation process, effects such as Coulomb scattering and energy dispersion of charged particles were added to the program. As a result, it was suggested that the effect of Coulomb scattering of charged particles other than protons and positrons has the most influence on the calculation results and is an important parameter.

● **Publications**

N/A

● Usage of JSS

● Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	Automatic Parallelization
Number of Processes	36 - 108
Elapsed Time per Case	43200 Second(s)

● JSS3 Resources Used

Fraction of Usage in Total Resources[1](%): 0.02

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage[2](%)
TOKI-SORA	8.00	0.00
TOKI-ST	193,029.47	0.19
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	13.33	0.01
/data and /data2	133.33	0.00
/ssd	133.33	0.02

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)	0.00	0.00

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