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Space
Structure
Stystems

Miyazaki Laboratory
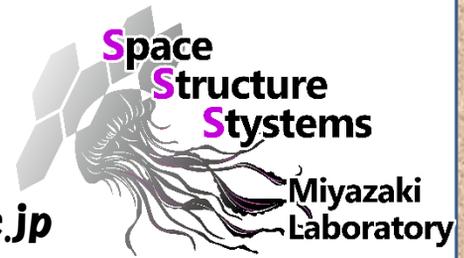
Education

➢ Apr. 2019-current:Nihon-University, Japan Master of engineering
➢ Apr. 2015-Mar. 2019:Nihon-University, Japan Bachelor of engineering

Qualification

➢ Amateur Third-Class Radio Operator

NEXUS

I have been participating in the NEXUS project since I was in the fourth year of university. We are currently operating NEXUS. we will proceed with preparations for ground station and analysis software to achieve the remaining missions. Also, in parallel with the mission, we will operate for amateur radio operators. In addition, the operation results will be announced on Twitter, HP and conference.
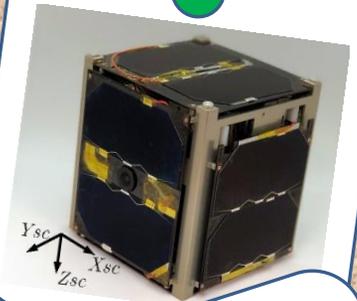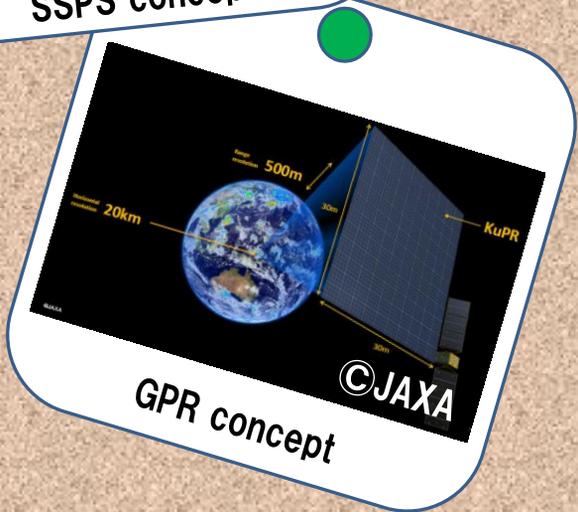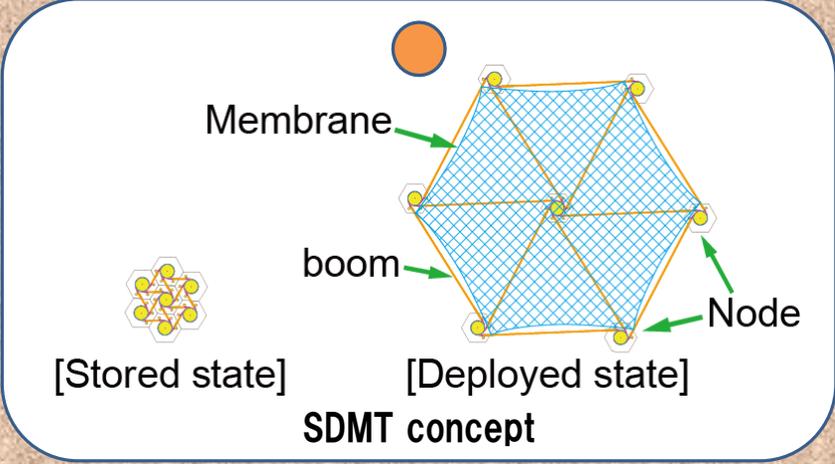
Research overview

• Research theme

> **Structural Study of Membrane Antenna for Large Space Structure**

• GPR&SSPS

JAXA aims to realize a Rainfall Radar (GPR) using a 30m-class phased array antenna. Aim to realize SSPS by showing that the technology demonstrated by GPR can be applied to SSPS as it is.
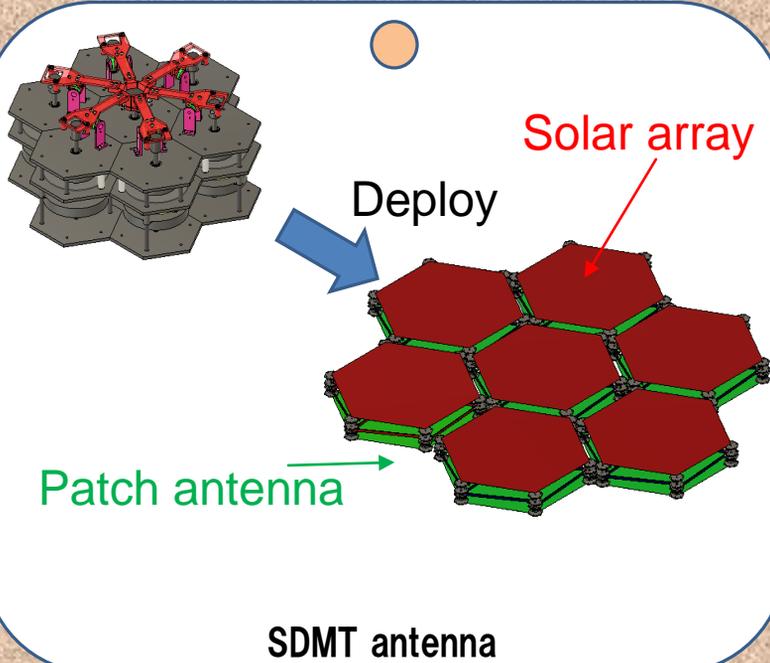
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SSPS concept

©JAXA

GPR concept

• SDMT(Self Deployable Membrane Truss)

Membrane

boom

Node

[Stored state]   [Deployed state]

SDMT concept

Advantage of SDMT

✓ High storage efficiency
✓ Light weight
✓ Simple deployment method
✓ Applicable to modular structure

•SDMT Antenna

Solar array

Deploy

Patch antenna

SDMT antenna

The antenna part of GPR consists of a panel. By applying SDMT to the antenna, it can be expected that the weight of the entire structure will be reduced and the storage efficiency will be increased.

•Micro-g experiment

We show the performance as an antenna by measuring the surface accuracy of 7N12B under microgravity.

Experiment layout
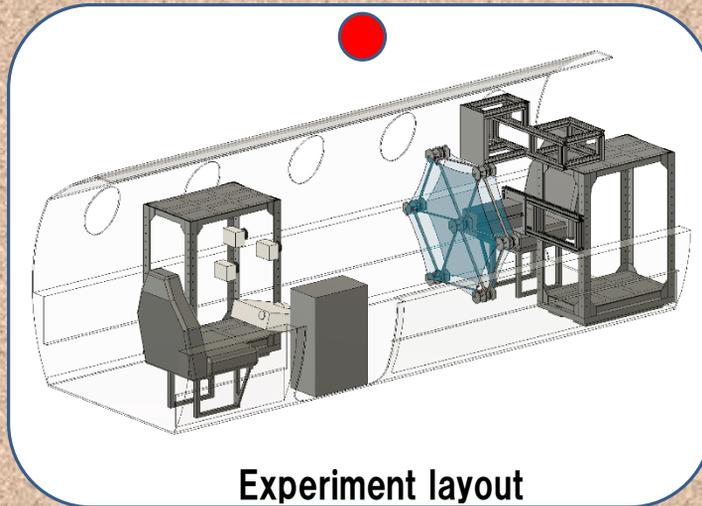
•To do list

- ✓ Natural vibration analysis of one module
- ✓ Natural vibration analysis of 30m class modular structure
- ✓ Measure the surface accuracy of 7N12B
- ✓ 1 module antenna pattern analysis
- ✓ Antenna pattern analysis with 30m class module structure