IPPW2015-8204

Institut für Strukturmechanik und Leichtbau

RWTH AACHEN UNIVERSITY

iBOSS

Source: TUB

Modular Satellite Concept

- **iBOSS** - **i**ntelligent **B**uilding Blocks for **O**n-Orbit **S**atellite **S**ervicing
- Intelligent standardized and modular system-blocks
- Breakdown of satellite bus on component level
- Separation of integrative and functional subsystems
- Redundant mechanical coupling of system-blocks by means of multifunctional interfaces

Enabling On-Orbit Servicing

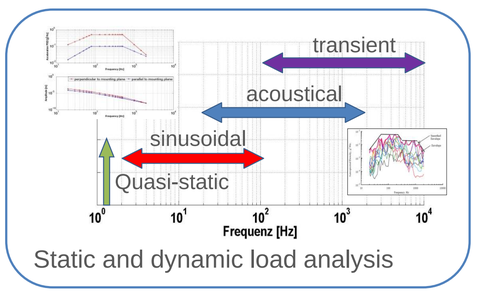
- Lifetime extension by maintainability
- Reconfiguration of satellite systems
- Reducing space debris
- On-Orbit Assembly

Research Disciplines

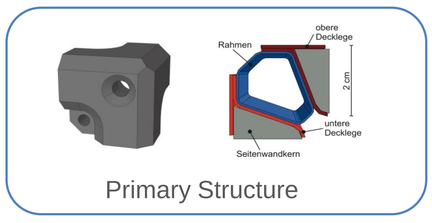
- Design of modular lightweight structures
- Structural dynamics
- Design of multifunctional interfaces (mechanical-, electric-, thermal- and data-coupling)
- Thermo-mechanics (thermal stability, thermal-stress, thermal conduction)
- Space debris protection
- Launch Configuration

Planetary Vision

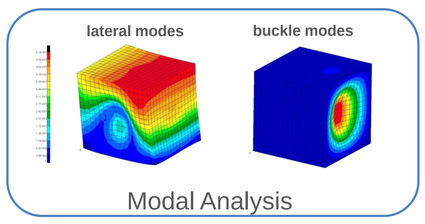
- Modular robotic components allow mission specific reconfigurations of planetary rovers
- Warehouse concept for components
- Planetary assembly of complex structures and facilities
- Modules for sample return



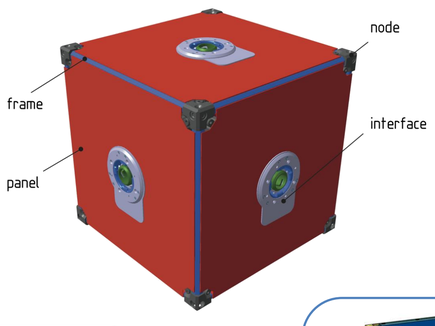
Static and dynamic load analysis

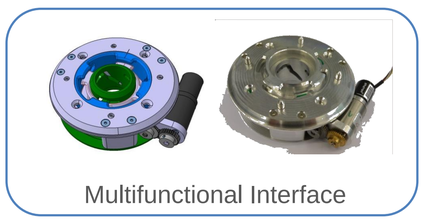


Primary Structure

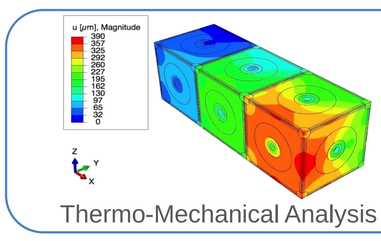


Modal Analysis

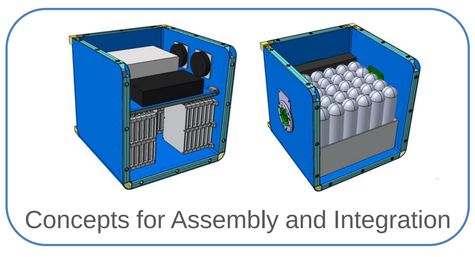




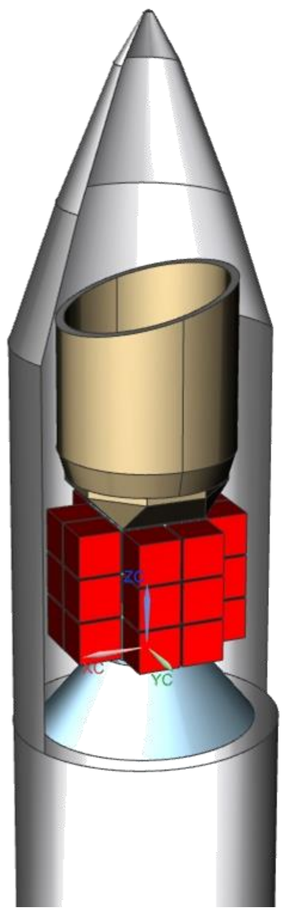
Multifunctional Interface



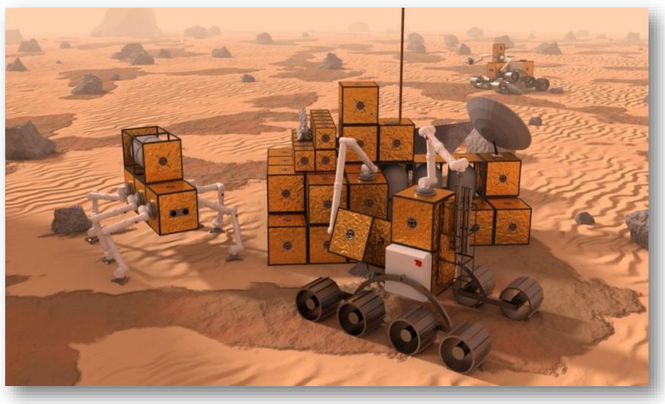
Thermo-Mechanical Analysis



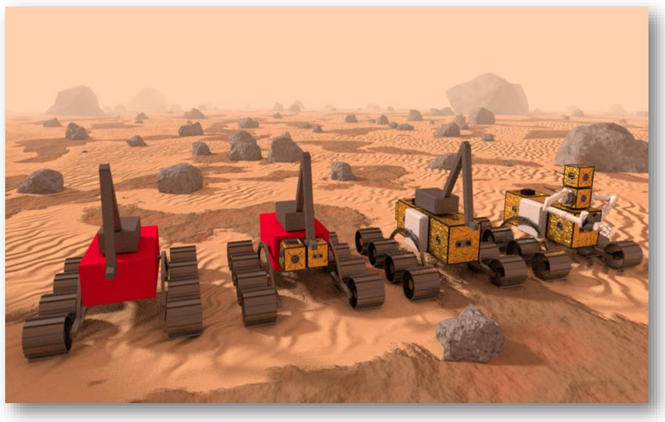
Concepts for Assembly and Integration



Launch configuration of reference satellite (ADM-Aeolus)



Modular assembly of larger planetary structures or facilities [Source: DFKI]



Standard and modular configuration of planetary robotic rovers [Source: DFKI]

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