SPACE LIFE SCIENCES SYMPOSIUM (A1)
The International Space Station in LEO and the Deep Space Habitat in Cis Lunar Space as platforms for simulated Mars voyages (4)

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ISS4MARS: EMPLOYING ISS MODULES FOR A MARS MISSION DRY RUN

Abstract

The International Space Station is the most valuable integrated analogue existing for simulating deep space exploration. The impacts of space environment and habitation conditions that astronauts will face during deep space transportation can be simulated in an integrated fashion on the ISS.

The ISS4Mars initiative proposes to adopt the ISS as test bed for final integrated space tests for many of the individual solutions needed to enable deep space voyages, such as missions to Mars. The existing ISS permanent and logistics modules are under study for this purpose, in order to ascertain which are the most affordable options for the integrated simulation. Space environment factors regarding micro-gravity and radiation are already under study on ISS as space exploration test bed: relevant applicable countermeasures will be simulated within ISS4Mars. Additional habitability and life support factors for deep space transfer include innovative crew quarters, regenerative life support, and dealing with training, maintenance, psychological and communication delay issues. Solutions for environmental control stemming from domotics and IoT are being studied.

This talk will provide a description of options for adopting existing modules and new affordable solutions for the ISS4Mars initiative simulations, elaborating on necessary technological developments, making maximum use of the ISS assets and cooperative endeavors in place.