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EXTENSION OF MULTIPLE ARTIFICIAL-GRAVITY RESEARCH SYSTEM

Abstract

JAXA has successfully developed a life experiment equipment new Multiple Arificial-gravity Research System (MARS) to be operated in Kibo. This equipment will be launched to ISS this fall and will start its operation soon. JAXA has been already conducting various life experiments using current MARS under microgravity and partial gravity environment, and obtained many achievements such as bone density affect by micro gravity using mice. By the deployment of new MARS, JAXA expects the outcome to be utilized in the research area to assess the impact of long term partial gravity (on the moon or Mars) against human for the manned space exploration beyond LEO. New MARS provides the gravity environment from 0.1G to 2.0G same as current MARS. In new MARS's specialized feature, it can provide the case of a rotor with twice the diameter of current MARS that gravity gradient is mild with respect to the distance from the rotation center. New MARS also has HD-SDI and LAN interface for user, and provides the electrical power two times more than that of current MARS. Current MARS and new MARS in Kibo will open new era of life science experiment in ISS with its high performance and its user-friendliness.