19th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)
Interactive Presentations - 19th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (IP)

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LARGE ARTIFICIAL ROTATIONAL GRAVITY ENVIRONMENT

Abstract

Artificial "spin" gravity has long been proposed as a method of keeping humans healthy during long duration missions in Earth orbit and deep space. In-development super-heavy-lift launch vehicles will provide ample mass and payload volume capabilities. This will enable the deployment of a Large Artificial Rotational Gravity Environment (LARGE) inside a pressurised volume.

LARGE will consist of an 8 m diameter rotating ring enclosed within a pressurised spacecraft, and can spin at a constant speed which can be varied to produce the desired level of artificial gravity. An adjacent system will be used to load and unload payloads onto the main ring, without the main ring needing to change its rotational speed. LARGE can provide numerous benefits for scientific research and long-term human health, which enables safe and comfortable exploration of the solar system in the near future.