

MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)  
Microgravity Sciences Onboard the International Space Station and Beyond - Part 2 (7)

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THE VARYING-GRAVITY EXPERIMENT RACK FOR SPACE SCIENCES IN CHINESE SPACE  
STATION

**Abstract**

Abstract: Chinese Space Station (CSS) is planned to be built around 2020. About 12 racks for space sciences will be installed in the pressure modules of CSS, which will support most space science experiments in the future. Varying-Gravity Experiment Rack (VGER) is one of them, VGER is used to provide gravity environment on space station. Compared with microgravity experiment, it can separate microgravity from other space environment effects and meet the needs of multidisciplinary scientific experiments, such as life, medical and fluid. It is an important technical condition to reveal the laws of science, improve the cognitive level and achieve the scientific goals of multidisciplinary research in microgravity. Experiment rack provides installed base for subsystems and modules, interface of mechanical, electrical, hydraulic, interface of space experiments process management and intervention from astronauts in orbit. The centrifuge system which is the core equipment of variable gravity experiment platform is the place for gravity experiments to be carried out. It provides the required level of simulated gravity and the interface of mechanical, electrical, hydraulic and video. Centrifuge system includes structure, controller, thermal control, rotor system and transmission system. Sample storage module provides storage space and environment for experimental samples, equipment, tools and spare parts. Expansion module supports comparative experiments in different microgravity levels and researches of other special pilot experimental projects. In this paper the complex VGER system will be described and challenges will be discussed.