

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

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MICROGRAVITY ENVIRONMENT MEASUREMENT IN JEM

Abstract

The Japanese experiment in the International Space Station (ISS) / Japanese Experiment Module (JEM) has started since August, 2008. At the same time JAXA began measuring the microgravity environment in JEM by Microgravity Measurement Apparatus (MMA). MMA has three remote sensors which are attached on the surface of the experiment rack (Ryutai Rack, Saibo Rack, Kobairo Rack). This measurement is mainly performed for two purposes. First purpose is providing microgravity environment data during experiment to reserchers. The reserchers use these data when they analyze experiment data. Second purpose is accumulating microgravity environment data at various vibratory event such as docking / undocking of transfer vehicle, communication antenna tracking and crew exercise. These data are used for estimation whether the disturbance have potential for impact on experiments. So the microgravity environment data collection and analysis are very important to success various experiment in JEM. Actually some of g-jitter affected JEM experiments. Especially Marangoni experiment (fluid physics experiment) is sensitive to g-jitter. JAXA plan this experiment only crew sleeping time in order to prevent g-jitter due to crew motion. Moreover we try to reduce g-jitter during Marangoni experiment. Therefore JAXA request NASA Micro-G team to collaborate on microgravity measurement and analysis. NASA has measured microgravity environment in JEM by Space Acceleration Measurement System (SAMS). And we discuss about the result of microgravity environment analysis after data collection. On the other hand, JAXA began measuring the microgravity environment at JEM exposed facility. This measurement is conducted by Microgravity Measurement Equipment (MME). MME has three sensors and installed in JEM exposed facility. JAXA performed MME checkout at May 2013 and confirmed that recieving data was normal. So we officially began measuring microgravity environment at JEM exposed facility aftertime. For example, during vibratory event such as docking / undocking of transfer vehicle, antenna tracking and crew EVA. Also we investigate the correlation of g-jitter between JEM pressurized facility and exposed facility. As mentioned above, JAXA continue to measure and analyze microgravity environment in JEM and figure out the cause of g-jitter. Of course JAXA keep on collaborating with NASA.