

MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
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MICROGRAVITY ENVIRONMENT 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. The first purpose is providing microgravity environment data during experiment to researchers. The researchers use these data when they analyze experiment data. The second purpose is accumulating microgravity environment data at various vibratory events 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 experiments in JEM. Actually some of g-jitter affected JEM experiments. Especially Marangoni experiment (fluid physics experiment) is sensitive to g-jitter. JAXA plans 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 requests 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 in May 2013 and confirmed that receiving data was normal. So, we officially began measuring microgravity environment at JEM Exposed Facility aftertime. For example, during vibratory events 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 keeps on collaborating with NASA.