IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
Microgravity Sciences on board of Space stations (6)

Author: Mr. Mohammad Iranmanesh
LIDE, Belgium, mohairanmanesh@gmail.com

Mr. Camille Gontier
LIDE, France, cam.gontier@gmail.com
Mr. Denis-Gabriel Caprace
LIDE, Belgium, dg_caprace@hotmail.com
Mr. Mehdi Scoubeau
LIDE, Germany, m.scoubeau@gmail.com
Mr. Ali Khorshidi Benam
Department of Aerospace Engineering, Science and Research Branch, Islamic Azad University, Iran, ali@khorshidi.net

DATA GENERATION FOR SPACE DEBRIS ATTITUDE SIMULATION USING GLIDER PARABOLIC FLIGHT

Abstract

The purpose of the Space Tumbling Attitude Data Generation (STAG) project is to provide high accuracy short-term data on the attitude and motion of tumbling objects in microgravity to support the development of attitude simulation software and the next generation of Active Debris Mission proposals. A novel experimental platform was developed to log the motion and attitude data of small objects using IMU sensors and image processing. The experience is design to fit a glider which can simulate microgravity conditions during specific phases of its parabolic flight path.

These data will also enable the cost-effective investigation of short term effect of both object shape and external influences. This paper also assesses if these data are a cost-effective way to validate trajectory and attitude propagation software. The results of this study contribute to a deeper understanding of the short term motion of tumbling objects, providing valuable data for the advancement of space debris removal technologies.