MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
Gravity and Fundamental Physics (1)

Author: Mr. Hanns Selig
ZARM University of Bremen, Germany, selig@zarm.uni-bremen.de

Mrs. Stefanie Bremer
ZARM University of Bremen, Germany, stefanie.bremer@zarm.uni-bremen.de
Dr. Meike List
ZARM University of Bremen, Germany, meike.list@zarm.uni-bremen.de
Dr. Benny Rievers
ZARM University of Bremen, Germany, benny.rievers@zarm.uni-bremen.de

PREPARATION OF THE IN-ORBIT CALIBRATION AND THE MISSION DATA ANALYSIS FOR THE MICROSCOPE MISSION

Abstract

The French drag free satellite mission MICROSCOPE aims at a high precision test of the Weak Equivalence Principle (WEP) with a new level of accuracy. The satellite which is scheduled for launch in 2016 carries the T-SAGE (Twin Space Accelerometer for Gravitation Experiments) developed by ONERA to measure the differential acceleration of two test masses made of different materials (Platinum and Titanium) capacitively. A violation of the WEP would induce a differential acceleration signal. The achievable accuracy of the WEP test depends on the resolution of the accelerometers and on the rejection of disturbing effects caused by internal and external influences like thermal radiation effects, solar radiation pressure, interactions with the earth magnetic field etc. The MICROSCOPE team at the Center of Applied Space Technology and Microgravity (ZARM) develops tools for a detailed mission modelling and simulation in close cooperation with the French partners ONERA, OCA and CNES. The main goal is to perform pre-launch test runs of the data processing with consideration of all relevant influencing effects, to contribute to the in-orbit calibration phases and finally to contribute to the data processing and data analysis. The scientific results are strongly desired by a broad community in the area of theoretical physics. The current status of the modelling and simulation development as well as the planned next steps will be presented.