MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
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FREE FALL PAYLOAD TESTS FOR THE MICROSCOPE SPACE MISSION

Abstract

The French drag free satellite mission Microscope aims for a high precision test of the Weak Equivalence Principle (WEP) with a never before reached level of accuracy. The satellite which is scheduled to 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) in a closed loop electrostatic regulation system. A violation of the WEP would induce a differential acceleration signal during the in-orbit measurement sessions.

The accelerometers will be delivered to Cnes in 2014 after several tests for qualification and verification. One important test is the demonstration of full operation in weightlessness including the determination of the sensor and controller characteristics. The tests are performed at the Zarm Drop Tower using the unique Catapult sytem which provides a high quality micro-g quality for more than 9 seconds.

This paper gives an overview about the qualification campaign of the T-SAGE sensor. The Catapult facility and the developments on the faciliy in order to improve the micro-g quality in the framwork of this campaign are shown. Analysis and results of the Microscope and SuperStar payload tests are shown and discussed in detail.