

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

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MODELING AND SIMULATION OF THE MICROSCOPE MISSION

**Abstract**

The French space mission Microscope aims at testing the weak equivalence principle up to an accuracy of  $\eta=1E-15$ . The experiment will be carried out on board of a small satellite, developed and produced within the CNES Myriad series. The desired accuracy of the measurement will be provided with the help of two high-precision capacitive differential accelerometers which are designed and built by the French institute ONERA. At ZARM, which is member of the Microscope performance team, the upcoming data evaluation process is prepared by using the High Performance satellite dynamics Simulator (HPS). This tool is developed in cooperation with the DLR Institute of Space Systems in Bremen. The HPS includes possibilities for modeling spacecraft and test mass dynamics as well as environmental disturbances (e.g. solar radiation pressure) and mission specific design aspects (e.g. geometry). Thus, a comprehensive simulator of the real system including the science signal and all error sources can be built. This contribution will contain a description of the HPS structure as well as the implementation of environment models. Secondly, the actual status of the "Microscope mission simulator" will be presented.