

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

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MICROSCOPE: A SPACE-BASED TEST OF THE WEAK EQUIVALENCE PRINCIPLE

Abstract

The French satellite mission MICROSCOPE has finally been launched in April 2016. After the successful commissioning phase, scientific measurements started in December and are planned to be continued at least for 18 month. The goal of the MICROSCOPE mission is to test the Weak Equivalence Principle (WEP) with a precision never achieved before.

Developed, built and now operated by the French space agency CNES, MICROSCOPE is the first satellite in a low Earth orbit using a drag-free AOCS. This technology as well as the scientific payload T-SAGE (developed and built by ONERA) form the foundation for the ambitious scientific goal. T-SAGE comprises two differential accelerometers which contain two test masses each. Due to the drag-free AOCS non-gravitational disturbances are cancelled out, thus allowing the test masses to follow a pure gravitational orbit. The accurate analysis of the test mass motion will finally result in either a confirmation or a contradiction of the WEP with an accuracy of $\eta = 10^{-15}$.

First scientific results are expected in June 2017. This contribution will summarize MICROSCOPE's road to space and highlight some features of the challenging data analysis procedure.