

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

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MICROSCOPE : FIRST SATELLITE DEDICATED TO MEASURE THE PRINCIPLE OF
EQUIVALENCE IN SPACE

Abstract

MICROSCOPE is a CNES-ESA-ONERA-CNRS-OCA scientific mission on fundamental physic developed in the frame of Myriade Microsatellite family.

The scientific objective consists to test the Equivalence Principle between gravitational mass and inertial mass with an relative accuracy of 10-15 ; i.e. one hundred times better than the one obtained today on Earth.

The satellite has been launched the 25th April 2016 from Guyana Space Center by Soyouz VS14, for a 2 years in orbit lifetime. In flight commissioning ended in December 2016, followed by scientific exploitation.

This paper begins with a introduction of the scientific goals, a presentation of the mission and the payload definition, the description of spacecraft design with a presentation of all the functional chains present on board, in particular most innovative elements as Drag Free and Attitude Control System (DFACS) and Cold Gas Propulsion System (CGPS).It is shown how the design of the satellite is optimized, mixing new advanced technology and low cost elements coming from Myriade family. The central part of the paper is focused on presentation of first in-flight results, especially coming from the commissioning phase, giving a complete overview of the performances achieved by the satellite. The paper will end with a synthesis of the development process and the lessons learned.