

Paris, 12 May 2016
PR085 – 2016

Microscope Major mission milestone as satellite switches to fine pointing mode

The Microscope satellite (MICROSatellite à trainée Compensée pour l'Observation du Principe d'Équivalence) has now been in orbit for three weeks and functional tests are ongoing to prepare to move it very soon now into mission mode. A major milestone was reached today when the satellite was switched into fine pointing mode.

Microscope is designed to test in space the validity of the founding principle of the theory of general relativity developed by Albert Einstein between 1907 and 1915, in which he assumed the equivalence of a gravitational field and a corresponding acceleration of the reference system. The challenge for Microscope is to achieve a level of precision 100 times better than any experiment yet performed on Earth, thus opening new vistas for theories of gravitation. The satellite has now been in orbit since 26 April and teams are running final tests before moving into mission mode so that it can start work.

On 3 May, Microscope activated its vital systems, in particular the T-SAGE instrument (Twin Space Accelerometer for Space Gravity Experiment), which was powered up from the CECT drag control centre at CNES in Toulouse, with the team from the French aerospace research agency ONERA in attendance. Another critical step was successfully performed with the release of the proof masses, which are now floating freely in space in readiness to begin measurements to test the equivalence principle.

The challenge facing Microscope this time was the switch to fine pointing mode, which it accomplished today. The satellite's magnetometer and magnetic torquers used in coarse pointing mode were shut down and its attitude is now being controlled using its micro-thrusters and its orientation is being determined by its star trackers. This key step before going into mission mode went without a hitch, much to the satisfaction of mission teams. The satellite sent confirmation today at 11.23 a.m. that everything is nominal and according to plan, and the teams were able to switch the satellite's instrument into high-resolution mode. It is now operating at full sensitivity.

CNES developed the full system and built the satellite. It provided nearly 90% of funding and was also prime contractor in charge of satellite bus development, integration and testing, and construction and operation of the mission operations control centre. Microscope was developed in collaboration with the as mission principal investigator responsible for the instrument and science mission centre, in partnership with the Geazur research laboratory, and with ESA, which supplied the satellite's microthrusters, and the German space agency DLR and two research laboratories, the ZARM centre of applied space technology and microgravity and the German metrology agency PTB.

More at

**<https://cnes.fr/fr/microscope-la-gravitation-mise-a-lepreuve>
et <https://plus.google.com/collection/Q7vux>**

Contacts

Pascale Bresson
Julien Watelet

Tel. +33 (0)1 44 76 75 39
Tel. +33 (0)1 44 76 78 37

pascale.bresson@cnes.fr
julien.watelet@cnes.fr

presse.cnes.fr