


RESEARCH
THE LISA PATHFINDER CUBES FLOAT FREE

Launched on 3 December last year and in its operating position since 22 January, at approx. 1.5 million km from Earth in the direction of the Sun, at the beginning of February the LISA Pathfinder probe completed the first step of its delicate scientific mission. Technological forerunner of the gravitational wave space observatory planned by ESA as the third big mission in its Cosmic Vision scientific programme, LISA Pathfinder aims to test the concept of detection of gravitational waves from space, showing that it is possible to control and measure with extremely high precision the movement of two masses in gravitational free fall. From 3 February, and over the following two days, the two test masses contained in the probe, two gold and platinum cubes with 46 mm side, were freed from the eight "fingers" that kept them firmly still during the preparation, launch and entry into orbit procedures of the probe and in the 6-week voyage to its operating position. Since then, the two cubes are floating in the heart of the spacecraft, in free fall a few millimetres from the walls of the compartment and at a distance of 38 cm from each other, connected only by a laser beam controlling their position. The inertial sensors, high precision instruments that envelop the test masses and control their position, were built by the Italian Space Agency based on the scientific design of researchers at the University of Trento and the National Institute for Nuclear Physics. ■