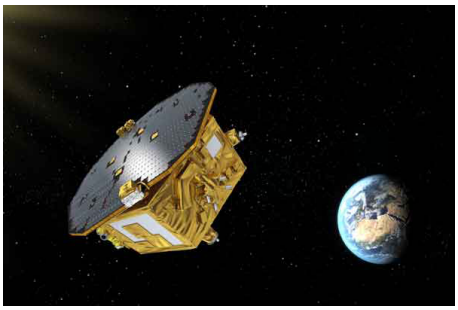

SPACE
LISA PATHFINDER SHOWS THE WAY

In orbit since January 2016, 1.5 million kilometres from Earth in the direction of the Sun, the LISA Pathfinder mission in just a few months has achieved its goal, demonstrating with an accuracy greater than expectations the technological feasibility of building a gravitational wave space observatory. The probe, built by ESA with the fundamental contribution of the Italian Space Agency (ASI), of INFN and of the University of Trento, was designed to test the technologies required for construction of the future eLISA observatory, a triangle of satellites connected by laser beams, 1 million km distant from each other and in orbit around the Sun, at 50 million km from Earth. The first two months of scientific activities of LISA Pathfinder show that the test masses on board the spacecraft, two 2 kg and 46 mm side gold-platinum cubes, are maintained in perfect free fall, undisturbed by other external forces, such as those due to solar wind or the Sun's radiation pressure. Substantially motionless with respect to each other, the two masses have a relative acceleration of less than ten millionths of a billionth (10^{-14}) of the acceleration of gravity on Earth. The results were published in June in the journal Physical Review Letters. ■