

## Test masses of ESA's LISA Pathfinder released successfully

- Airbus Defence and Space-built probe achieves major milestone to enable science operations

LISA Pathfinder, the European Space Agency's (ESA) gravitational-wave detection technology demonstrator, built by Airbus Defence and Space, the world's second largest space company, has achieved the next milestone to enable science operations. Satellite operators from ESA, supported by engineers from Airbus Defence and Space, successfully released the test masses (nicknamed Jake and Elwood) inside the spacecraft's scientific instrument.

The LISA Technology Package (LTP), which weighs around 150 kilograms, includes laser interferometers measuring changes in the distance between two precision-engineered gold/platinum test masses, each weighing 1.96 kilograms and changes in distance of these test masses to the spacecraft.

Now in orbit around Lagrange point L1, 1.5 million km away from Earth, the two test masses have been released from a grabbing, positioning and release mechanism and held in position with a weak electrostatic field that can be very precisely controlled. Over the coming weeks, the spacecraft control system, also developed by Airbus Defence and Space, will reduce the electrostatic force on the test masses, culminating in the science mode of operation, when no force is applied to one test mass along the axis connecting the two masses. The spacecraft is then forced to follow this "drag-free" test mass.

The laser interferometers measure the relative position and orientation of the masses – which are 40 centimetres apart – to an accuracy of less than one millionth of the width of a human hair, or less than 0.01 nanometre.

Airbus Defence and Space in the UK was chosen by the European Space Agency (ESA) to build the spacecraft and propulsion module and is responsible for delivering the integrated satellite. Airbus Defence and Space in Germany was chosen by ESA and the German Aerospace Centre, DLR, to be the systems leader for the LTP, which was developed with contributions from European research institutes and companies.

### Airbus Defence and Space

**Airbus Defence and Space** is a division of Airbus Group formed by combining the business activities of Cassidian, Astrium and Airbus Military. The new division is Europe's number one defence and space enterprise, the second largest space business worldwide and among the top ten global defence enterprises. It employs more than 38,000 employees generating revenues of approximately €13 billion per year.

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