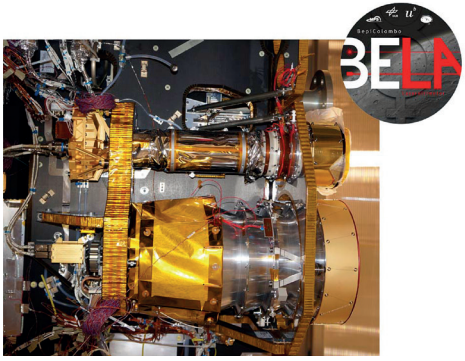
BepiColombo (BELA)

BepiColombo Laser Altimeter

Brief description

BELA was launched successfully in October 2018 on board the joint ESA/JAXA BepiColombo Mission to Mercury. BELA will measure the planet's topography using laser pulse distance measurements. Due to Mercury's proximity to the Sun, BELA will have to deal with intense heat and sunlight. As such, it has been equipped with a particularly elaborate thermal protection system.



Aims

The BepiColombo mission aims to investigate the evolution of the little-explored planet Mercury. BELA will provide information about the global shape, rotation and topography of the Sun's innermost planet. In addition, tides, altitude profiles and geological features will be examined in detail. The surface roughness will be determined from the shape of the received pulses.

Parties involved

DLR, University of Bern, Max Planck Institute for Solar System Research, Instituto de Astrofísica de Andalucía

Applications

- Exploration of the Solar System
- Planetary geodesy
- Planetary physics
- Planetary geology
- Basic research

Outlook

- Unique, new data for Mercury
- First interplanetary laser altimeter on a European mission
- Expanding system leadership for interplanetary laser altimeters (Europe)
- Further development of laser altimeters: GALA (ESA JUICE mission)

Facts and figures

Mission launch: October 2018
Arrival at Mercury: 2025
Measuring principle: distance-time-law (speed of light)
Receiver: APD (Avalanche Photo Diode)
Pulse frequency: 10 Hz
Accuracy height measurement (vertical): ~1 m
Mass: 15 kg

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE