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BEPICOLOMBO – A JOINT ESA/JAXA MISSION TO EXPLORE MERCURY

Abstract

BepiColombo is a joint project between ESA and the Japanese Aerospace Exploration Agency (JAXA). The Mission consists of two orbiters, the Mercury Planetary Orbiter (MPO) and the Mercury Magnetospheric Orbiter (MMO). The mission scenario foresees a launch of both spacecraft with an ARIANE V in July 2016 and an arrival at Mercury in the first half of 2024. From their dedicated orbits the two spacecrafts will be studying the planet and its environment. The MPO scientific payload comprises eleven instruments/instrument packages; the MMO scientific payload consists of five instruments/instrument packages. Together, the scientific payload of both spacecraft will perform measurements to find clues to the origin and evolution of a planet close to its parent star. The MPO on BepiColombo will focus on a global characterization of Mercury through the investigation of its interior, surface, exosphere and magnetosphere. In addition, it will be testing Einstein's theory of general relativity. The MMO provided by JAXA focuses on investigating the wave and particle environment of the planet from an eccentric orbit. Together, the scientific payload of both spacecraft will provide the detailed information necessary to understand the process of planetary formation and evolution in the hottest part of the proto-planetary nebula as well as the similarities and differences between the magnetospheres of Mercury and the Earth. Most scientific instruments are already integrated into the spacecraft and both spacecraft have undergone successfully the thermal vacuum and thermal balance test (TV/TB) campaigns. The presentation will inform on the current status of the mission, spacecraft and payloads, especially in reference to the MESSENGER mission, that successfully ended its operations this year.