

## **BepiColombo – the next step: Science Operations at Mercury**

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BepiColombo is the planetary mission of the Cosmic Vision Programme of the European Space Agency (ESA), devoted to the thorough exploration of Mercury and its environment. It will be carried out as 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 a Soyuz-Fregat in August 2013 and an arrival at Mercury in August 2019. The 6 years cruise phase is achieved with a combination of fly-bys (at moon, Venus, and Mercury) and electric propulsion. The MPO payload comprises 11 instruments/instrument packages; the MMO payload consists of 5 instruments/instrument packages. 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. Major effort was put into optimizing the scientific return by defining the payload complement such that individual measurements can be interrelated and complement each other. 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. The status of the BepiColombo mission will be given with special emphasis on the modeling of the scientific operations of the MPO payload.