

## **BepiColombo-MMO scientific aspects and system update**

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BepiColombo is the first collaborated full-scale mission between ESA and JAXA, for the interdisciplinary studies of planet Mercury. BepiColombo consists of 2 orbiters, Mercury Planetary Orbiter (MPO) and Mercury Magnetospheric Orbiter (MMO). MPO will be developed under the responsibility of ESA, while MMO will be developed under responsibility of JAXA. The MMO spacecraft is a spin-stabilized spacecraft to be placed in an eccentric polar orbit with perihelion height of 400km and aphelion height of 12,000km. MMO mainly studies magnetic field, exosphere, magnetosphere, and inner interplanetary space. Onboard instruments are mostly dedicated to the study of the magnetic field, waves, and particles in the environment of Mercury. Comparison of magnetic field and magnetosphere with the Earth will provide the new visions to the dynamics and physical processes in the magnetosphere.

Main scientific objectives of the MMO spacecraft are:

- 1) Structure and origin of internal magnetic field
- 2) Structure, dynamics, and processes of the magnetosphere
- 3) Structure, variation, and origin of the exosphere
- 4) Physical environment of inner solar system

To maximize the science output of MMO, announcement of opportunity for MMO was issued by JAXA last year and following 5 scientific instruments are selected:

- a) Mercury Plasma Particle Experiment (MPPE)
- b) Magnetic Field Investigation (MERMAG-M/MGF)
- c) Plasma Wave Investigation (PWI)
- d) Mercury Sodium Atmosphere Spectral Imager (MSASI)
- e) Mercury Dust Monitor (MDM)

This paper describes scientific aspects of MMO and updated system status.

**Keywords:** Mercury; BepiColombo; Magnetosphere; Exploration