



Science observation and operation plans of BepiColombo MMO

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BepiColombo is an ESA-JAXA joint mission to Mercury with the aim to understand the process of planetary formation and evolution as well as to understand similarities and differences between the magnetospheres of Mercury and Earth. The baseline mission consists of two spacecraft, i.e. the Mercury Planetary Orbiter (MPO) and the Mercury Magnetospheric Orbiter (MMO). The two orbiters will be launched in 2017 by an Ariane-5 and arrive at Mercury in 2024. JAXA is responsible for the development and operations of MMO, while ESA is responsible for the development and operations of MPO as well as the launch, transport, and the insertion of two spacecraft into their dedicated orbits. Being a spin-stabilized spacecraft, MMO has much less constraint for plasma observations and is expected to extract essential elements of space plasma physics that become visible in the Hermean environment. However, MMO has large constraints on science operations, such as thermal issue and limited telemetry rate. Due to the thermal issue each science instrument cannot always be turned on. In addition, due to the low telemetry rate in average, only a part (~20-30%) of science mission data with high resolution can be downlinked. Therefore, in order to maximize the scientific results and outcomes to be achieved by MMO, we must optimize the science observation and downlink plans in detail. In this paper, we summarize the basic plans and strategies of MMO science operations.