

Magnetic Cleanliness of BepiColombo MMO

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In the terrestrial planets, Earth and Mercury has the intrinsic dipole magnetic field. The Mercury magnetic moment is relatively smaller than that of Earth; the magnetic field intensity on the Mercury surface is about 1 percent of that on the earth surface. Therefore the Mercury magnetospheric condition is significantly affected by the variation in the solar wind, and varies with the short period. The magnetic field around Mercury and its nature has been studied by MESSENGER which was launched by NASA and arrived at Mercury in 2011. However, because the magnetic field around Mercury is summation of the intrinsic and external origin, and MESSENGER always has the perigee in the north hemisphere, the Mercury intrinsic magnetic moment has not been determined accurately. BepiColombo is planed to be launched in 2016 and arrive at Mercury in January 2024. It consists of two satellites, MMO built by JAXA, and MPO by ESA, which will observe together the magnetic field around Mercury. BepiColombo has advantages to determine the accurate magnetic moment, which is one of the major scientific target of the BepiColombo project. The orbit shape is not biased, and the measurement at two locations enables to separate the intrinsic field and the external contribution. For the accurate measurement of the magnetic field, it is very important to suppress the magnetic noise generated by the components installed on the satellite. In the phase of the development of the satellite, the design of the every component was examined not to cause the magnetic noise which would degrade the magnetic field measurement. During the manufacturing period, components were controlled not to be magnetized. The means of the magnetic cleanliness of MMO and the result of the system EMC test, where the magnetic moment of MMO was measured, are reported.

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