

Effect of Solar Flares to Plasma/Field Observations near the Mercury: Prospects based on GEOTAIL observations

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Mercury, the nearest planet to the sun, mission is being proceeded as a joint project between ESA and ISAS. One of the objectives of this project that is named BepiColombo is to survey the Mercury Magnetosphere. Many results to the Mercury Magnetosphere will be produced by various instruments onboard the spacecraft.

However the spacecraft near the Mercury will be exposed to the higher radiation from the sun than that near the Earth, because the distance to the Sun is shorter. As the BepiColombo mission will be taken during the next active period of the sun, we cannot ignore impulsive effects to the spacecraft by solar flares. Therefore it is important to estimate the effects of the solar activity to the spacecraft observation near the Mercury.

We examined the effects of solar flares to the instruments onboard GEOTAIL before. The results are summarized below: (1) The Micro Channel Plate of the Low Energy Particle experiment, LEP, during the large solar gamma-ray events is activated. (2) The sunward electric fields detected by a 100m tip-to-tip double probe onboard GEOTAIL are often enhanced during solar flares, which are associated with Hard X-ray bursts. (3) The occurrence frequencies of the LEP/MCP activation and the enhancement of the sunward double-probe electric field during the X-class solar flares are both ~0.4.

Based on these GEOTAIL observations during solar flares we will estimate the effects of solar flares to the plasma/field observation near the Mercury.