

Development of DC electric field and plasma wave investigations for future missions

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In order to realize the lightweight and highly precise DC/AC electric-field measurement in the magnetosphere / ionosphere for future missions, the fusion of the present receiver system a DC/AC division type which was established by GEOTAIL (It has been inherited by BepiColombo/MMO) and the DC/AC integration type currently used in Cluster is needed. For this objective, the floating circuit technology in an electric system, i.e., a) low noise floating power supply, b) DC/AC common broadband floating amplifier, and c) floating potential control section by the preamp output are required. By the circuit designs & testing of the BBM level, the electric component technology for DC - 10 MHz band observation for future terrestrial magnetospheric mission was established. However the action of circuit for the floating GND system is not quite finished yet. In the next step, we investigate the followings.

- (1) Separation of the bias current circuit from the floating power supply
- (2) Establishment of low noise and high stability high voltage power supply circuit
- (3) Establishment of method to reduce the noise due to the DC/DC converter

The Japan original DC electric field and plasma wave instrument with DC/AC common amplifier will be completed by these investigations

In this presentation we will show about an investigation of floating amplifier and results of test for a bread board model (BBM) of the floating amplifier. And new type pre-amplifier can be applied to the investigations in the magnetosphere and ionosphere for future missions