

Development of ASIC-based fluxgate magnetometer (AFG) and its flight proof on RockSat-XN sounding rocket

Reiko Nomura[1]; Kazushi Asamura[2]; Ayako Matsuoka[3]; Hirokazu Ikeda[4]; Hirotsugu Kojima[5]; Mariko Teramoto[6]; Masafumi Hirahara[7]; Yoshizumi Miyoshi[8]; Keisuke Hosokawa[9]

[1] NAOJ; [2] ISAS/JAXA; [3] ISAS/JAXA; [4] ISAS, JAXA; [5] RISH, Kyoto Univ.; [6] Kyutech; [7] ISEE, Nagoya Univ.; [8] ISEE, Nagoya Univ.; [9] UEC

For the magnetometer for space missions, reduction of its size and weight results higher potential of installation into the satellite and leads renewed scientific achievement, for example multi-point observations. In order to achieve such an ultra-small and light magnetometer with power saving and low noise, we developed an ASIC-based Fluxgate magnetometer (AFG) which includes analog-ASIC in its circuit.

AFG is in the instrument package called PARM (Pulsating AuRora and Microburst) which is aimed to investigate the mechanism of microburst by in-situ observation. PARM joined one of the Ground Challenge Initiative, RockSat-XN program (or G-CHASER student rocket), in order to investigate the microburst and its dependence on pulsating auroras. AFG and other three instruments, HEP, MEP, and AIC of PARM were installed into the NASA's RockSat-XN sounding rocket at Wallops flight facility of NASA in August 2018. AFG is placed on the top deck of the rocket where is suitable for avoiding the noise from rocket systems itself. On 13 January 2019 at 09:13:00UT, the rocket was successfully launched from Andoya space center (69.29N, 16.01E) in Norway and reached its altitude of 174km. During this flight, AFG has successfully observed the geomagnetic field. In this presentation, we show the calibration and flight data of AFG to discuss its performance in the space environment.