

PARM 計画: 観測ロケット RockSat-XN による高エネルギー電子マイクロバースト現象の観測

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PARM: Observations of microburst precipitation of high-energy electrons based on the RockSat-XN sounding rocket

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Microburst precipitation of high-energy electrons (higher than approx. 100keV) is frequently observed by low-altitude satellite. Recently, the microburst precipitation was successfully reproduced by numerical simulations based on pitch-angle scatterings of the electrons due to whistler mode chorus waves at off-equator region. Since the whistler mode chorus waves are likely related to the pulsating aurora activities, one can expect that relationship between the microburst precipitation and the pulsating aurora.

We have built PARM (Pulsating AuroRa and Microburst) instrument package to perform in-situ direct plasma measurements of the microburst phenomena during the pulsating aurora. PARM consists of high-energy electron instruments (HEP and MED, 20keV - 2MeV is covered), an auroral imager (AIC), and a magnetometer (AFG, a fluxgate magnetometer powered by the state-of-art ASIC device). PARM is already installed in the RockSat-XN sounding rocket operated by NASA Wallops, and will be launched in January, 2019 from Andoya, Norway.

In addition, we are participating in the LAMP (Loss through Auroral Microburst Pulsations) sounding rocket mission led by NASA GSFC and U. of New Hampshire, which will be launched in December, 2019. We will also provide an instrument package and coordinated ground-based observations to LAMP.

We will report on a status of PARM.