

Energy spectra variations of high energy electrons in the inner magnetosphere depending on magnetic latitude and longitude observed by ARASE and HIMAWARI

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The ARASE spacecraft was launched in December 20, 2016 to investigate mechanisms for acceleration and loss of relativistic electrons in the radiation belts during space storms.

Interactions between waves and particles are the cause of particle acceleration and disappearance in the radiation belt. Because of these interactions, it appears as a change in the power law index of the energy spectrum and flux changes in the observation. The relativistic electrons in the outer radiation belt were disappeared/increased and their energy spectra were changed dynamically in some storms observed by XEP/HEP onboard the ARASE spacecraft. So, detailed calibration between observation instruments, HEP, XEP on ARASE and SEDA-e on HIMAWARI, is required to identify affected energy by wave-particle interactions. We have carried out mutual calibration using data of HEP, XEP and SEDA-e.

When comparing the energy spectra, there are times when the spectrum matches or does not match. It is also observed that the change in the power law index of the energy spectrum differs with time. These phenomena are observed even when there are two satellites at the same local time. We investigate the influence of difference of magnetic latitude on energy spectrum because ARASE satellite and HIMAWARI satellite have different inclination angles on orbits and we will report results.

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