

Energetic electrons observed in the plasma sheet near the outer radiation belt

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Energetic electron bursts observed in the plasma sheet near the outside edge of the outer radiation belt are surveyed by using the data obtained by Arase (ERG) during the last summer from May to July, 2017, when the apogee local time was located around the midnight. The orbital inclination of Arase is about 31 degrees, so that Arase can observe higher latitude plasma sheet near the plasma sheet boundary, and, as expected, Arase observed the plasma sheet just outside of the outer radiation belt. In these observations, we found that energetic electron bursts up to 500 keV frequently appear at higher L-value plasma sheet. There were 36 electron burst events during the interval. Possible sources of these energetic electron bursts of a few hundreds keV in the region are (1) directly accelerated from magnetotail reconnection sites and (2) dispersion-less injections. It is interesting to distinguish the acceleration source of them and address each contribution of the energy input to the radiation belt for understanding the relation between magnetotail reconnection and the acceleration of MeV electrons in the radiation belts. These electron bursts do not show beam like velocity distributions, and, in some events, bursts are associated with the injection like magnetic field fluctuation. We will discuss these characteristics of the observed energetic electron bursts by using the wide-range electron distribution measurements.

Keywords: energetic electron bursts, electron acceleration, outer radiation belt