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## Repetition period of REP and chorus observed during the conjunction event of ISS/CALET and the Arase satellite

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Relativistic electron precipitation (REP) is the enhancement of downward electron counts in the MeV energy range detected at the LEO orbit. The pitch angle scattering by chorus emissions in the magnetosphere is one of the mechanisms responsible for REP. The percentage of each type of wave that causes REP has yet to be identified. Kandar et al. (2023) reported distributions of the repetition periods of REP. They compared them with the distribution of repetition periods of rising tone chorus elements derived by Shue et al. (2015) in different magnetic local time categories. Results of the comparison indicated close agreement between REP and chorus in the night, dawn, and day MLT sectors where chorus emissions are frequently observed. Ozaki et al. (2018) showed agreement between the intensity modulation of chorus and pulsating aurora caused by keV electrons. In the present study, we explore the characteristic of REP caused by chorus emissions by analyzing the conjunction event of ISS/CALET and the Arase satellite.

We analyze observation data of ISS CALET/CHD for REP and Arase PWE/OFA for chorus. ISS CALET/CHD consists of two orthogonal layers of plastic scintillators, with CHD-X and CHD-Y thresholds corresponding to  $\geq 1.6$  MeV and  $\geq 3.6$  MeV electrons, respectively. From count rate ratio of CHD-X to CHD-Y, we defined the REP event when the ratio  $\geq 1.2$ . We defined the criteria of the conjunction between ISS and Arase as the period when Arase's footprint was within  $\pm 2.5$  degrees of latitude and within  $\pm 15$  degrees of longitude from ISS while REP was occurring. We identified the 103 conjunction events in the observation data from February 2017 to December 2023. Among them, there were 23 events where chorus was observed. In this paper, we focus on an event in 18:31:00-18:37:00 on April 24, 2017, one of three events treated by Kataoka et al. (2020) in which REP and plasma wave occurred simultaneously and chorus was observed. In this event, the Arase satellite observed chorus at -23 degrees of the magnetic latitude within  $L=4.62-4.73$ , and 0.15-0.30 MLT ranges. The observed chorus appeared in the frequency range from 0.4 to 3 kHz. We estimated the cyclotron resonance energy and found that waves in the frequency range from 0.9-3 kHz can resonate with 1.6-3.6 MeV electrons. We analyzed the repetition period of REP, defined as the interval between points where the gradient of count rates ratio is  $\geq +0.25$  /time duration. We identified three enhancements (spikes) of REP during this conjunction. While the repetition periods of the observed chorus were commonly in 2-5 sec, we found that the REP occurred with similar repetition periods. Since the interval of the REP event contains a small number of data per spike, we present the result of a multiple case study to reveal the statistical relationship between chorus and REP.