

Correlation between relativistic electron flux and EMIC rising-tone emissions observed by the Van Allen Probes

Satoko Nakamura[1]; Yoshiharu Omura[2]; Craig A. Kletzing[3]

[1] Dept. of Geophys., Kyoto Univ.; [2] RISH, Kyoto Univ.; [3] Department of Physics and Astronomy, UoI

Spacecraft observations and simulations have revealed generation of coherent electromagnetic ion cyclotron (EMIC) rising-tone emissions in the inner magnetosphere [1,2]. The EMIC rising-tone emissions have recently received much attention because of the possibility of their strong nonlinear interaction with relativistic electrons [3]. We present the observation of EMIC rising-tone emissions from the Van Allen Probes. We have found that a number of EMIC rising-tone emissions were detected by the EMFISIS Waves instrument on the Van Allen Probes, and that some EMIC rising-tone emissions accompanied by a variation of the electron flux. On 23 February 2014, EMFISIS detected strong EMIC rising-tone emissions excited repeatedly in the dayside magnetosphere (MLT \sim 13 and L \sim 6). In this period, the Magnetic Electron Ion Spectrometer (MagEIS) shows that relativistic electron fluxes fluctuate at the same time with the rising-tone emissions. We can also find that fluxes of electrons with the energy greater than about 0.4 MeV decrease and the minimum energy changes according to the maximum frequency of each EMIC rising-tone emission.

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