

Modulation of electron pitch angle distributions observed by MEPe onboard the Arase satellite

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We report on the modulation of electron pitch angle distributions observed by Medium Energy Particle experiment - electron analyzer (MEPe) on board the Arase satellite. MEPe has a capability to measure three dimensional distribution functions of electrons in the energy range from 7 keV to 80 keV with a fine angular resolution (~ 5 degrees). The pitch angle distributions are characterized by flux enhancement of 10 - 30 keV electrons in a very narrow and oblique pitch angle range. The observed pitch angle distributions are similar to quasiperiodic bursts of energetic electrons in conjunction with upper-band chorus reported by Fennell et al. [2014] based on the Van Allen Probes measurement. The MEPe measurement newly found that decrease in electron flux below 10 keV at low pitch angles is also accompanied with the flux enhancement. We found several events showing that quasi-periodic modulation in electron pitch angle distributions in the MEPe dataset, and plasma wave measurements by Plasma Wave Experiment (PWE) revealed that upper-band chorus is necessarily observed in conjunction with the flux enhancement. We will show characteristics of the flux enhancement observed by MEPe and discuss the generation mechanism of the flux variation based on simultaneous electron and plasma wave measurement by the Arase satellite.