R006-28
A 会場 ：11/7　AM2 （10:45-12:30）
11:00〜11:15

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High temporal variation in electron fluxes during flux burst events observed by the Arase satellite

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We examine the high temporal variation in electron fluxes during flux burst events observed by Medium Energy Particle experiment-electron analyzer (MEP-e) onboard the Arase satellite. The flux burst event is characterized by a flux increase of 17-30 keV electrons within 30 seconds at an oblique (60-80 degrees) pitch angle range, which is accompanied by a decrease in electron fluxes at lower energy and pitch angle ranges [Kurita et al., 2018]. The rapid flux variation is observed in association with the appearance of intense upper-band chorus emissions. It is suggested that the nonlinear wave-particle interaction between electrons and the upper-band chorus is a plausible mechanism of the flux variation. The importance of the nonlinear wave-particle interaction is examined by a test-particle simulation, and it is found that the acceleration through nonlinear phase-trapping is essential to cause the rapid flux increase [Saito et al., 2021]. It is of interest to further examine whether signatures of nonlinear electron acceleration are captured by MEP-e during the flux burst event. The flux burst event was analyzed using the MEP-e data with a time resolution of ˜8 seconds (1 spin period). On the other hand, MEP-e has the capability to derive pitch angle distributions every 250ms because of its 2-pi radian disk-like field-of-view and measurement scheme. Using the pitch angle distribution with the high temporal resolution, we investigate sub-second flux variations during the flux burst event in detail. We find that the flux increase consists of two components: one is the almost same increase as the 1-spin average increase, and the other is a much larger flux increase than the 1-spin average. The larger increase is less frequently observed compared to the smaller one. Thus the larger flux increase does not significantly contribute to the 1-spin averaged flux variation. It is possible that the large flux increase seen in the 250-ms MEP-e data is a signature of electron acceleration through nonlinear wave-particle interactions. It is suggested that this possibility can be investigated by performing a virtual observation in a test-particle simulation.