Inter-channel calibration of the high-energy electron experiments (HEP) instrument onboard the Arase satellite

Tomoaki Hori[1]; Takefumi Mitani[2]; Takeshi Takashima[3]; Inchun Park[4]; Satoshi Kurita[1]; Mariko Teramoto[5]; Nana Higashio[6]; Satoshi Kasahara[7]; Shoichiro Yokota[8]; Yoshizumi Miyoshi[1]; Iku Shinohara[9]
[1] ISEE, Nagoya Univ.; [2] ISAS/JAXA; [3] ISAS, JAXA; [4] ISEE, Nagoya univ.; [5] Kyutech; [6] JAXA; [7] The University of Tokyo; [8] Osaka Univ.; [9] ISAS/JAXA

Inter-channel comparison of electron fluxes measured by the high-energy electron experiments (HEP) instrument onboard the Arase satellite has been conducted with a focus on the apparent non-uniformity in detection efficiency and relative offset of the background flux level between the channels. On the basis of the two-year data since the start of the prime mission, we have derived empirically relative efficiencies for all azimuthal channels of the HEP-L module. In the course of the inter-channel comparison, we also confirmed that a few channels are significantly blocked by some structures on the surfaces of the satellite and/or those extending from the satellite body. Considering all of those results, we have finally derived relative correction factors for azimuthal channels. The new set of correction factors significantly improves angular distribution spectra, such as pitch-angle spectra of particle flux. The efficiency correction will be incorporated into Level-2 version 2 data products and the new data set will be made available soon.