

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

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A detailed study of electron fluxes measured by the HEP instrument onboard the Arase satellite is conducted to calibrate flux values by empirically evaluating the relative detection efficiency between azimuthal channels and its short- to long-term variations. For this purpose, we made a statistical analysis of the HEP Level-2 data obtained mainly during the first 1-year period since the regular observations started on March, 2017. Our preliminary results indicate that no substantial decrease in measured flux level has not been seen in terms of the long-term trend of observed fluxes, implying that no significant degradation has occurred so far for the instrument detectors. Detailed comparison of flux values between azimuthal channels shows that there is some non-uniformity in detection efficiency and relative offset of the background flux level between the channels. On the basis of the statistics, we seek to derive a set of correction coefficients to normalize the efficiency difference of the channels, which is essential to obtain a correct 3-D distribution function of energetic electrons.