

## Observation of energetic particles in the inner radiation belt with HEP onboard the Arase

Honoka Toda<sup>1</sup>, Wataru Miyake<sup>1</sup>, Takefumi Mitani<sup>2</sup>, Takeshi Takashima<sup>2</sup>, Yoshizumi Miyoshi<sup>3</sup>, Inchun Park<sup>3</sup>, Tomoaki Hori<sup>3</sup>

<sup>1</sup>*Tokai Univ.*

<sup>2</sup>*ISAS/JAXA*

<sup>3</sup>*ISEE/Nagoya Univ.*

HEP instrument on board the Arase satellite measures electrons with energies from 70 keV to 2 MeV. However, the HEP has detected unexpected counts even at MeV energy channels in the inner radiation belt where no MeV electrons are expected. The unexpected counts are supposed to result from contamination of energetic protons. In order to identify energy of protons we compare the spatial distribution of HEP counts with three kinds of proton distribution models AP8MAX, AP9 mean, CRRESPPRO quiet and two kinds of electron distribution models AE8MAX and AE9 mean. The distribution of HEP counts is almost equivalent among different energy channels. When the energy of the model is low, the location of the peak deviates from that of the observed distribution. CRRESPPRO quiet of >55 MeV, AP8MAX, and AP9 mean of >30 MeV seems to be consistent with HEP observations. Even raising the energy further, the position of the peak does not change in the models. The model distribution with high energy did not extend far to larger L value and the distribution from HEP observation seems to be a combination of the sharp peak at small L and the spread to larger L.

### References

Mitani, T., Takashima, T., Kasahara, S., Miyake, W. and Hirahara, M., High-energy electron experiment (HEP) aboard the ERG (Arase) spacecraft, *Earth Planet Space*, Vol. 70, 2018.