

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

©2011. Japan Geoscience Union. All Rights Reserved.



PPS024-P02

Room:Convention Hall

Time:May 22 14:00-16:30

Study of lunar plasma environment using gyro-loss effect on electron velocity distributions

Yuki Harada^{1*}, Shinobu Machida¹, Yoshifumi Saito², Shoichiro Yokota², Kazushi Asamura², Masaki N Nishino², Hideo Tsunakawa³, Hidetoshi Shibuya⁴, Futoshi Takahashi³, Masaki Matsushima³, Hisayoshi Shimizu⁵

¹Dept. of Geophys., Kyoto Univ., ²ISAS/JAXA, ³Dept. Earth Planet. Sci., Tokyo TECH, ⁴Dept. Earth & Env., Kumamoto Univ., ⁵ERI, University of Tokyo

The Moon possesses neither a global magnetic field nor a thick atmosphere. Therefore, the Moon and its surrounding plasma are ideal for investigating the interaction between charged particles and a solid body. Analysis of the data obtained by Kaguya (SELENE) revealed a partial loss in the electron velocity distribution function due to "gyro-loss" effect, namely gyrating electrons being absorbed by the lunar surface. The empty regions in the observed electron distribution functions are consistent with the patterns of forbidden regions obtained by particle trace calculations, taking into account magnetic anomalies, lunar surface charging and electric fields around the Moon. In this study, lunar surface charging and electric fields around the Moon are studied by analyzing electron "gyro-loss" events observed where there are weak or no magnetic anomalies.

Keywords: Moon, plasma, Kaguya