[JJ] Evening Poster | P (Space and Planetary Sciences) | P-CG Complex & General

[P-CG23]Planetary Magnetosphere, Ionosphere, and Atmosphere

convener:Kanako Seki(Graduate School of Science, University of Tokyo), Takeshi Imamura(Graduate School of Frontier Sciences, The University of Tokyo), Naoki Terada(東北大学大学院理学研究科, 共同), Hiroyuki Maezawa(Department of Physical Science Osaka Prefecture University)
Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
Exploration of Moon, Venus, Mars, Mercury, Jupiter, Saturn, and beyond together with rapid developments of numerical simulations provides us new view of planetary environment. This session collects general contributions of new findings about planetary magnetosphere, ionosphere, and atmosphere. New methodology and technology development studies for future explorations are also welcome. In order to put the common knowledge at different planets into perspective, this session aims to facilitate discussions on comparative planetary environments.

[PCG23-P08]Energy dependent electron pitch angle scattering due to elastic collisions in the neutral H_2O Enceladus torus

*Hiroyasu Tadokoro[1], Yuto Katoh[2] (1.Musashino University, 2.Tohoku Universtiy)
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Water group neutrals (H_2O, OH, and O) in Saturn’s inner magnetosphere play the dominant role in loss of energetic electrons and ions because of abundance of the neutrals [e.g., *Paranicas et al.,* 2007,2008; *Sittler et al.,* 2008]. The previous studies suggested that the neutral cloud originated from Enceladus contributes to loss processes of plasma in the inner magnetosphere. However, little has been reported on a quantitative study of the electron loss process due to electron-neutral collisions. In this study, we focus on the elastic collisional loss process with neutrals. Conducting one dimensional test-particle simulation, *Tadokoro et al.* [2014] examined the time variations of equatorial pitch angle distribution and electrons within loss cone through 1 keV electron pitch angle scattering due to electron-H_2O elastic collisions around Enceladus when the electron flux tube passes the region of the dense H_2O molecules in the vicinity of Enceladus (~380 sec). The result showed that the electrons of 11.4 % are lost in ~380 sec. Assuming the uniform azimuth H_2O density structure in the torus, they also estimated the electron loss rate of 33 % during one corotation. Next remaining issue is a calculation of energy dependent electron loss rate. We show the loss rate of electrons with 500eV-50keV and the comparison of the loss rate between the high (in the vicinity of Enceladus) and low (in the Enceladus torus) H_2O density regions.