

**R009-21**

**B会場：11/7 AM2 (10:45-12:30)**

**11:00~11:15**

#坂東 日菜<sup>1)</sup>, 原田 裕己<sup>2)</sup>, 寺田 直樹<sup>3)</sup>, 中川 広務<sup>4)</sup>

(<sup>1</sup>京大・理・地球惑星,<sup>2</sup>京大・理,<sup>3</sup>東北大・理・地物,<sup>4</sup>東北大・理・地球物理)

## **Simultaneous observations of ionospheric irregularities at Mars by Mars Express MARSIS topside sounder and MAVEN**

#Hina Bando<sup>1)</sup>, Yuki Harada<sup>2)</sup>, Naoki Terada<sup>3)</sup>, Hiromu Nakagawa<sup>4)</sup>

(<sup>1</sup>Kyoto Univ.,<sup>2</sup>Kyoto Univ.,<sup>3</sup>Dept. Geophys., Grad. Sch. Sci., Tohoku Univ.,<sup>4</sup>Dep. Geophysics, Grad. Sch. Sci., Tohoku Univ.,

Since Mars has no intrinsic magnetic field, the solar wind directly interacts with the Martian ionosphere, leading to ionospheric disturbances driven by the solar wind. Meanwhile, observations in the dayside ionosphere by Mars Atmosphere and Volatile EvolutionN (MAVEN) indicate that there is a strong correlation between ion and neutral density profiles structure, suggesting an ion-neutral coupling in the upper atmosphere (Mayyasi et al., 2019). Gurnett et al. (2008) reported that diffuse echoes sometimes appear on the ionogram obtained by the Mars advanced radar for subsurface and ionospheric sounding (MARSIS) on Mars Express. These echoes are presumed to be caused by irregularities in the ionosphere. However, no studies have yet compared echoes from remote observations with in-situ electron density perturbations, and the detailed properties of ionospheric irregularities that cause diffuse echoes are still unknown. Here, we surveyed conjunction events in which Mars Express and MAVEN observed the ionosphere quasi-simultaneously. We then, for each event, determined whether the in-situ electron density perturbations were driven by solar wind forcing or neutral atmospheric waves by examining the ratio of gyro frequency to collision frequency and the correlation between neutral density fluctuations and ion density fluctuations. The case analysis revealed that the spatial scale of the in-situ electron density perturbations is approximately 120 -400 km. In some cases, high solar wind dynamic pressure appeared to be the driving source of electron density perturbations that are specific only to ionized atmospheres. Additionally, the statistical analysis results show that the in-situ electron density perturbations create diffuse echoes on the ionogram. In this presentation, we discuss the frequency and wavelength characteristics of the in-situ electron density perturbations that cause diffuse echoes based on the observations, and what parameters they depend on.