R007-01
C 会場 ：9/25　AM1 （9:00-10:30）
9:00〜9:15

#千葉　翔太 [1)], 今村　剛 [2)], 安藤　紘基 [3)]
([1] 東京大学,[2] 東京大学,[3] 京産大

Magnetic field and density fluctuations associated with a CME observed during a radio occultation experiment of the solar corona

#Shota Chiba[1)],Takeshi Imamura[2)],Hiroki Ando[3)]
([1]Graduate School of Frontier Sciences,The University of Tokyo,[2]Graduate School of Frontier Sciences, The University of Tokyo,[3]Kyoto Sangyo University

The solar wind is a supersonic plasma flow streamed from the solar corona. Solar wind acceleration mainly occurs in the outer corona at heliocentric distances of about 2–10 solar radii, where the coronal heating by magnetohydrodynamic waves and the wave-induced magnetic pressure are thought to play major roles in the acceleration. The mechanisms have not been fully confirmed because the acceleration occurs in regions where no spacecraft has ever reached to date. Recently, however, an inner heliosphere observation network is getting ready, by such as NASA's Parker Solar Probe and ESA's Solar Orbiter and BepiColombo.

Radio occultation observations cover the acceleration region fully and can obtain information complementary to in-situ observations. Radio occultation observations are conducted during the passage of a spacecraft on the opposite side of the sun as seen from the Earth. Inhomogeneity of coronal plasma density structure traversing the ray path disturbs radio waves' frequency so that we can interpret the received frequency fluctuations as density fluctuations in the coronal plasma. Furthermore, using dual-circular polarization signals transmitted from the spacecraft, we can derive the Faraday rotation (FR) from the phase difference between right-hand circular polarization (RCP) and left-hand circular polarization (LCP). we can obtain the plasma density and magnetic field structure of the solar wind from FR measurements.

Wexler et al. (2017) proposed a method to derive FR from the cross spectrum between the RCP and LCP signals of the spacecraft. Using this method, we have derived the FR from the radio occultation data taken during the solar conjunction of JAXA's Akatsuki spacecraft in 2016. According to SOHO/LASCO C2 images, a coronal mass ejection (CME) crossed the ray path on 9 June 2016 during this campaign. The FR on this day shows larger amplitudes than the other observations at similar solar offset distances, and the time series of the electron column density shows a rapid increase around the time of the CME event. Jensen et al. (2018) reported FR measurements associated with a CME event on 10 May 2013 using the signals transmitted by the Messenger spacecraft. The FR obtained from our analysis has similar amplitudes to the FR which is shown by Jensen et al. (2018). We will report the initial results of the FR analyses.