R007-03
Zoom meeting B ：11/2 PM2 (15:45-18:15)
16:15〜16:30

かにパルサーの巨大電波パルスを用いたサイクル 24/25 極小期における太陽コロナ密度測定

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Coronal density measurements at Cycle 24/25 minimum using giant radio pulses of the Crab pulsar

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Observations of the Crab pulsar have been conducted since 2017 at the Toyokawa observatory of Institute for Space-Earth Environmental Research (ISEE) of Nagoya University using the 327-MHz radiotelescope called the Solar Wind Imaging Facility Telescope (SWIFT). We derived dispersion measures (DMs), which represent the integration of electron density along the line of sight (LOS), from Crab pulsar observations. The LOS for the Crab pulsar approaches to the sun as close as 5 solar radii every mid-June; therefore, Crab pulsar DMs enable investigation of the plasma density distribution near the sun. We detected increases in DM, which were ascribed to the effect of the coronal plasma, from Crab pulsar observations in June 2018 and 2019. We determined the plasma density distribution near the sun by fitting a spherically symmetric model to observed DM increases. The best fit model had a flat radial slope, which was attributed to the effect of the coronal hole over the poles. This interpretation was verified from comparison between our DM data and LOASCO/C3 coronagraph observations. Further, the coronal density model obtained here was similar to that derived from earlier studies using DM measurements in solar minima or declining phases of the past solar cycles. This suggests that the plasma density level of this minimum remained unchanged from those in the past cycle despite of significant weakening solar activity in this cycle. A marked decline in the solar wind density was reported from in situ measurements in the Cycle 23/24 minimum and early part of the Cycle 24. In this study, we argued possible explanations to reconcile our result with earlier studies.