

## Measurement of solar wind density distribution using dispersion measures of Crab pulsar

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Dispersion measures(DMs) derived from pulsar observations provide an integral of the plasma density on the line-of-sight (LOS) from the pulsar to the observer. The purpose of this research is to estimate the solar wind (SW) plasma density in this cycle from the rise in DM value when the LOS of pulsar approaches the sun. The solar activity of this cycle is very low and the SW plasma density decreases. Pulsar observation is useful for examining this change because they cover a wide range of distances and latitude. We used the Crab pulsar in this research. Crab pulsar is a neutron star that emits pulsed radiation over a wide frequency range, and radiation is observed at intervals of about 33 milliseconds. This radiation is affected by plasma, such as interstellar medium (ISM) and SW, causing signal propagation delays. This delay depends on frequency; i.e. DM. The LOS of Crab pulsar approaches a distance of  $\sim 5R_s$  ( $R_s$ : solar radius) in mid-June every year. Previous observations showed an excessive rise in DM when the LOS of Crab pulsar approached the sun. We observed the Crab pulsar for the period from September 2018 to June 2019 using a 327MHz radio telescope (SWIFT) for IPS observation in Toyokawa. The observation time for a given day was 6 minutes, and 8 minutes for June 2019. Focusing on strong pulses (SNR > 15) during observation, we determine the optimal DM so that the pulses have the highest intensity. Observations from January to March 2018, relatively many pulses were observed. DM data with little influence of SW is obtained from this observation data and this DM data represents the effect of ISM. We analyze the DM value of June 2019 to investigate the SW plasma density at  $\sim 5R_s$ . We will present the results of this analysis at the JpGU 2020.

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