R007-05 **会場: B** **時間: 11 月 3 日 11:40-11:55**

Fine spectral structures of a solar radio type-II burst observed with AMATERAS (II)

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Solar radio type-II bursts are metric to hectometric radio bursts that show frequency drifting spectral structures caused by the plasma emission from shock-accelerated electrons. The burst has rapidly drifting fine structures in their spectra: one of such the phenomena is, for example, called "herringbone" [Roberts, 1959], which is composed of both negative and positive drifting burst elements. The drifting fine structures in type-II bursts are interpreted as the motion of non-thermal energetic electron beams accelerated by the shock. However, their particle acceleration mechanisms have not been fully understood. The purpose of this study is to extract characteristics of the fine spectral structures of type-II bursts from high-resolution observations and investigate their acceleration processes.

AMATERAS (the Assembly of Metric-band Aperture Telescope and Real-time Analysis System; Iwai et al., 2012) is a ground-based solar radio telescope developed by Tohoku University. This system enables us to observe solar radio bursts in the frequency range between 150 and 500 MHz with the 10 ms accumulation time and 61 kHz bandwidth, which is suitable for observing characteristics of fine structures of solar radio bursts. A type-II burst event was observed on November 12, 2010, which showed distinctive fine spectral structures. Assuming the Baumbach-Allen coronal density model, the shock speed related to this type-II burst was 500-650 km/s and the Mach number of the shock was 1.17-1.35. We derived the following properties of the fine spectral structures of this type-II burst;

1. Negative drift elements were found more frequently than positive drift elements.
2. In many cases, the start frequency of the positive drift elements located near the center frequency of the main spectral structures of the observed type-II.
3. A velocity of the electron beam was derived from the drift rate of the individual burst element and the 10 times Baumbach-Allen coronal density model. The mean value and standard deviation of the derived beam velocities increased with increased radial distance of the radio source region from the solar surface.

Then, we newly determined intensity threshold of fine spectral structures and extracted all fine spectral structures contained in the type-II to derive statistical characteristics of them. This analysis enables us to reveal characteristics of particle accelerations in the propagating single shock more precisely than ever.

In this presentation, we will show revealed statistical characteristics of the fine structures and discuss inferred particle acceleration features using several coronal density models.