[JJ] Evening Poster | P (Space and Planetary Sciences) | P-EM Solar-Terrestrial Sciences, Space Electromagnetism & Space Environment

[P-EM19]Heliosphere and Interplanetary Space

convener:Ken Tsubouchi(Tokyo Institute of Technology), Masaki N Nishino(Institute for Space-Earth Environmental Research, Nagoya University), Yasuhiro Nariyuki(富山大学人間発達科学部)
Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
This session aims to secure comprehensive insights into physical processes of plasmas and fields in the heliosphere. Presentations of the recent studies from any approaches (integrated observation/theoretical modeling/massive numerical simulation) are welcomed. Topics are not restricted to any specific issues: phenomenological studies on solar flares/CME/solar wind, and related fundamental physics problems such as shocks/waves/turbulence/particle transport and acceleration can be the main target, including heliospheric high-energy phenomena and their impact on the Earth's environment.

[PEM19-P04]Quasi-periodic Modulations of A Zebra Pattern in A Solar Radio Burst and Their Origin

Kazutaka Kaneda[1], *Hiroaki Misawa[1], Kazumasa Iwai[2], Satoshi Masuda[2], Fuminori Tsuchiya[1], Yuto Katoh[3], Takahiro Obara[1] (1.Planetary Plasma and Atmospheric Research Center, Graduate School of Science, Tohoku University, 2.Institute for Space Earth Environmental Research, Nagoya University, 3.Department of Geophysics, Graduate School of Science, Tohoku University)
Keywords:Sun, radio burst, zebra pattern, quasi-periodic variation, magneto-hydro dynamic wave

Various magnetohydrodynamic (MHD) waves have recently been detected in the corona and investigated intensively in the context of the coronal heating and coronal seismology. In the radio wave band, signatures of these waves can be recognized as quasi-periodic modulation in intensity and other quantities. Searching for signatures of such kind of waves, we investigated a zebra pattern (ZP) in a solar radio burst on 2011 June 21. For this, high-resolution radio spectral data observed with the Assembly of Metric-band Aperture Telescope and Real-time Analysis System (AMATERAS) were analyzed in detail. Consequently, we found two different quasi-periodic modulations in frequency separation between the stripes (Δf) and radio intensity with the typical periods of 1–2 s and 1–3 s, respectively. The modulation in Δf showed a characteristic negative frequency drift of 3–8 MHz/s. Based on the Double Plasma Resonance (DPR) model, the Δf modulation can be interpreted as small scale (about 8,000 km) disturbances propagating along the coronal loop with phase speeds of the 3,000–8,000 km/s. Most probably, the Δf modulation can be interpreted as impulsively generated propagating fast sausage mode waves. On the other hand, the intensity modulation can be explained by the quenching of the loss-cone instability, known as negative bursts. In this presentation we suggest that magnetic reconnection in the low corona could be the source of the both of modulations in Δf and in intensity.