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ポスター 1 ：11/24　PM1/PM2 （13:15-18:15）

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Statistical analysis of pulsating auroras and high-latitude propagation of chorus waves

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Pulsating auroras (PsA) are considered to be caused by precipitation of a few to a few tens of keV electrons. The energetic electrons are scattered by lower-band chorus (LBC) waves, which are one of the whistler-mode waves in the magnetosphere, through the cyclotron resonance. Past study has suggested that, during PsA, relativistic electrons causing ozone depletion simultaneously precipitate into the ionosphere [Miyoshi et al., 2021]. Observational studies also suggested that, relativistic/sub-relativistic electrons precipitate to lower altitudes when PsA has a patchy structure and that PsA patches tend to develop towards the morning side [Tesema et al., 2020; 2022]. Our previous study proposed that the relationship between the PsA shape and the energy of precipitating electrons is controlled by presence of magnetospheric density ducts and associated high-latitude propagation of chorus waves [Ito et al., 2024]. However, the background mechanism of how density ducts are generated, and the universality of the proposed model have not been clarified yet.

In order to understand the detailed development process of density ducts and quantitatively evaluate the universality, we are in the progress of a statistical analysis of PsA patches simultaneously observed by the multipoint optical instruments in the northern Europe and the Arase satellite. The survey period is from March 2017 to March 2024. We count the appearance of patches at the footprint of Arase as a single sample and investigate the spatiotemporal development of PsA patches, propagation latitudes of chorus waves. In this presentation, we will report the details of the analysis method, the observed data, and the initial results and discuss the statistical relationship between the PsA morphology, magnetospheric density ducts and high-latitude propagation of chorus waves.