

## Characteristics of electron flux variations associated with Pc5 auroral arc pulsations observed onboard THEMIS and DMSP

Natsuo Sato<sup>1</sup>, Akira Sessai Yukimatu<sup>1,2</sup>, Yoshimasa Tanaka<sup>1,2</sup>, Tomoaki Hori<sup>3</sup>, Akira Kadokura<sup>1,2</sup>, Tohru Sakurai<sup>4</sup>

<sup>1</sup>*National Institute of Polar Research*

<sup>2</sup>*The Graduate University for Advanced Studies*

<sup>3</sup>Institute for Space-Earth Environmental Research, Nagoya University

<sup>4</sup>Tokai University

Pc5 poleward moving auroral arc (PMAA) pulsations observed on the ground in the post midnight sector exhibit east-west-aligned auroral arcs elongated ~ 1000-3000 km and behave poleward moving form with recurrence period of ~ 2-10 minutes (Pc5 range). They appear just poleward side of common type pulsating auroras. We examine the space-ground coordinated observations with the THEMIS-A, D, and E spacecraft whose footprint traversed near the region of Pc5 PMAA pulsations observed at the THEMIS ground-based all-sky imager network. It is found that (1) Pc5 PMAA pulsations occur in association with the enhancement of magnetic field and electric field oscillations observed near the equatorial plane of the magnetosphere, (2) the magnetic field, electric field, and velocity data observed by THEMIS-A, D, E show latitudinal/radial wave amplitude and phase shift structures, which is consistent with the field-line resonances (FLRs) theory, (3) enhancement of FLRs oscillations in the magnetosphere is ahead of auroral pulsations in the ionosphere and the period of FLRs oscillations is longer than that of auroral pulsations, (4) statistical results show that the occurrence maximum on magnetic local time is around 03 and that on solar wind speed is around 700 km/s. It is suggested the observed Pc5 PMAA pulsations are enhanced by FLRs oscillations produced by the Kelvin-Helmholtz instability-driven surface waves at the magnetopause. We will discuss the mechanism how to produce the field-aligned electric field that is directly relating to the generation of auroral pulsations. In this study we focus on the characteristics of electron flux variations associated with the Pc5 PMAA pulsations observed onboard the THEMIS and DMSP spacecraft. The THEMIS satellites are located near the equatorial plane in the magnetosphere and the DMSP satellites traverse in the ionosphere and cross over the field of view of all-sky imager at THEMIS observatories in Canada and Alaska and at Syowa Station in Antarctica. Initial results show that the electron flux observed by DMSP demonstrates a feature of field-aligned acceleration.