

## Pc5 オーロラアーク脈動の地上・衛星同時観測

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## Ground-space coordinated observations of Pc5 auroral arc pulsations and field line resonances in the post midnight sector

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We report results from a detailed analysis of a Pc5 poleward moving auroral arc (PMAA) pulsation event using the ground-based THEMIS all-sky imager and magnetometer network observations and the coordinated onboard THEMIS-A, D, E satellites. 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) ion and electron flux in the energy range of  $\sim 2$ -20 keV shows negative modulation in association with the FLRs oscillations, (4) Y component of velocity data show large ( $\sim 40$ -50 km/s) velocity shear between THEMIS-D and E, where the orbit of THEMIS-D is almost the same as the orbit of THEMIS-E in X and Z position, but that is 0.2 Re separation in Y position, (5) 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, (6) 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.