## Comparison of substorm onsets between all-sky images and Pi2 magnetic pulsations.

\*三浦 翼<sup>1</sup>、家田 章正<sup>1</sup>、川嶋 貴大<sup>1</sup> \*Miura Tsubasa<sup>1</sup>, Akimasa Ieda<sup>1</sup>, Kawashima Takahiro<sup>1</sup>

1. 名古屋大学宇宙地球環境研究所

1. Institute for Space-Earth Environmental Research (ISEE), Nagoya University

Substorms are explosive disturbance in the earth' s magnetosphere and ionosphere. Substorm onset are traditionally identified using sudden auroral brightenings or magnetic Pi2 pulsations. These auroral brightenings and Pi2s are believed to occur typically within 1 minutes. On the other hand substorm onset has originally been defined to have two-stage development, i.e., two brightenings. Thus, it is unclear whether the Pi2s correspond to the first or the second brightening. To clarify this association, we compared all-sky images and Pi2 pulsations in Canada, using the data from THEMIS project. As a result, a Pi2 pulsation was observed at 04:36 UT on 29 February 2008. About the same time, an auroral initial brightening (04:33:30 UT) and the poleward expansion (i.e., the second brightening, 04:39:18 UT) were observed in Fort Smith. This result suggests that the Pi2 pulsation can be delayed by a few minutes from the substorm onset, which is originally defined by the auroral initial brightening.

キーワード:地上全天画像、オーロラ爆発 Keywords: All-Sky Images (ASIs), auroral breakup