

## 磁気圏尾部で観測されるアクティブ／非アクティブなフロー反転について

## Active and non-active flow reversals observed in the magnetotail

\*篠原 育<sup>1</sup>、長井 嗣信<sup>2</sup>、藤本 正樹<sup>1</sup>、小嶋 浩嗣<sup>3</sup>、銭谷 誠司<sup>4</sup>\*Iku Shinohara<sup>1</sup>, Tsugunobu Nagai<sup>2</sup>, Masaki Fujimoto<sup>1</sup>, Hirotsugu Kojima<sup>3</sup>, Seiji Zenitani<sup>4</sup>

1.宇宙航空研究開発機構／宇宙科学研究所、2.東京工業大学、3.京都大学／生存圏研究所、4.国立天文台

1.Japan Aerospace Exploration Agency/Institute of Space and Astronautical Science, 2.Tokyo Institute of Technology, 3.Kyoto University/Research Institute for Sustainable Humanosphere, 4.National Astronomical Observatory of Japan

We have statistically examined low-frequency plasma wave activity observed in the near Earth magnetotail flow reversals. 2/3 of the flow reversals have enhanced cross-tail electron current layer and ion-electron decoupling region detected in association with the simultaneous plasma flow and magnetic field reversals ("active" X-line), while the rest events do not show visible ion-electron decoupling features ("non-active" flow reversal). The most important conclusion of the present study on the electric wave activity in the lower hybrid frequency range is that only the active X-line events are accompanied by strong wave activities. Since the region where the strong wave activities are observed overlaps well with the ion-electron decoupling region, the ion-electron decoupling process would be related to excitation mechanisms of the intense electric wave activity. It means that the electric wave power around the flow reversals is a possible indicator for the ion-electron decoupling region (possibly, the liveliness of reconnection). This new finding would be one of the clues leading to our understanding of large-scale evolution of the magnetotail reconnection site. It is hard to address the physical meaning of the differences between active and non-active flow reversals only with single spacecraft measurements. This would be a good topic to be explored using MMS.

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