

# Local linear growth rate of collisional Rayleigh-Taylor instability under geomagnetic disturbed conditions during solar maximum

C. C. Lee<sup>1</sup> and S. Y. Chou<sup>2</sup>

<sup>1</sup>General Education Center, Ching-Yun University, Taiwan

<sup>2</sup>Center for General Education, Hsuan-Chung University, Taiwan

## **Abstract**

This study chooses 5 cases under geomagnetic disturbed conditions to investigate the effects of geomagnetic disturbance on local linear growth rate ( $\gamma$ ) of collisional Rayleigh-Taylor (CR-T) instability. On case at 30 July 1999, the  $\gamma$  value at 1900 LT is larger than the associated monthly averages under quiet-conditions of April and October 1999. Since the occurrences of equatorial spread F (ESF) are higher in April and October, the ESF is generated in the sunset period. In contrast, at 12 and 22 September 1999, the  $\gamma$  value at 1900 LT is smaller than the associated quiet-conditions monthly averages of June 1999, in which the ESF occurrence is lower. Thus, the ESF does not occur in these two days. In addition, the growth rates in the cases of 26 September and 31 December 1999 are not affected by the geomagnetic disturbances. The ESF appear in these two days, because of the higher ESF occurrences in September and December. These results show that the case-by-case variability exists in the responses of geomagnetic disturbance to growth rate.