Characteristics of energy transfer of Pi 2 magnetic pulsations : Latitudinal dependence

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We previously reported the latitudinal dependence of Pi2 magnetic energy propagation in the 1997 SGEPSS fall meeting. Our previous result is summarized as follows:
(1) At Zyryanka (ZYK; L=3.91), which is presumably mapped to the vicinity of plasmapause, the time when the Pi2 magnetic energy becomes maximum (Tmax) tends to be delayed from that at the near equatorial station Guam (GUA; L=1.01).
(2) At Kotel'nyy (KTN; L=8.50), which is located poleward of the typical oval latitude, Tmax tends to precede that at GUA.
(3) The latitudinal dependence of Tmax, except Tmax at Kotel'nyy, can be explained in terms of the different travel times of Alfven and fast magnetosonic waves from the magnetospheric equator to the ionosphere.

The present study examines the distribution of Tmax in terms of the time of flight (TOF), which is estimated from Tsyganenko 96 model. The result shows that the values of Tmax are mostly in the range of TOF estimated for different Kp numbers.
The above results suggest that the nightside Pi2 wave observed at low and middle latitudes is an Alfven wave that is converted from a fast magnetosonic wave near the magnetospheric equator.
This fast magnetosonic wave is presumably generated in the source region and then propagates toward the Earth.