

## Estimation of the acceleration mechanisms of the cusp particles

# Tomoyuki Oku[1], Shigeto Watanabe[2], Toshifumi Mukai[3]

[1] Earth and Planetary Sci., Hokkaido Univ, [2] Earth and Planetary Sci., Hokkaido Univ., [3] ISAS

It is known that the different velocity filter effects are observed for the different conditions of the interplanetary magnetic field (IMF) in the cusp region [e. g., Rosenbauer et al., 1975], in other words, the energy of the cusp plasma falls with increasing latitude for southward IMF conditions, and the energy falls with decreasing the latitude for northward IMF conditions [e.g., Onsager et al., 1993; Lockwood and Smith, 1993]. The particles are apparently accelerated by comparison with the sheath plasma [Hill and Reiff, 1977] and it is considered that the acceleration is resulted from the reconnection of the magnetic field [Smith and Lockwood, 1996]. Nevertheless the region of the reconnection is estimated only with the velocity of the cusp particle and the adjustments between the observed and the modeled distribution function of the particle is not yet carried out [e.g., Cowley, 1982].

Not only the velocity filter effects but also multiple injections are observed in the cusp region. The multiple injections are not yet explained neither. The reason comes from the lack of detailed information on both the energy and the pitch-angle of the particle.

We present a new analysis of the Akebono-LEP data to investigate the adjustments between the model and observation and to examine the construction of the multiple injections. As a result we can get the temperature and the accelerated velocity of the sheath particles when they injected. For the new analysis, we assumed the conservation of the magnetic momentum and the Maxwellian energy distribution of sheath ions.