

## A parametric study of non-linear evolution of tearing mode with temperature anisotropy

# Iku Shinohara[1]; Masaki Fujimoto[2]

[1] ISAS/JAXA; [2] ISAS, JAXA

We have studied the non-linear evolution of the tearing instability with temperature anisotropy,  $T_{perp} > T_{para}$  by using 2-D full kinetic simulation. As predicted by the linear-theory, e.g. Chen and Palmadesso (1984), Quest et al. (2010), the growth rate of the tearing mode increases as higher anisotropy,  $T_{perp}/T_{para}$ . A parametric study changing the anisotropy ratio and the ion-electron temperature ratio with a fixed current sheet thickness has been done, and we found that the growth rate and saturation level at the non-linear stage are independent on parameters once the explosive growth starts. The most impressive result is that there exists a threshold value of the ion-electron temperature ratio for enabling the explosive growth as the results of Tanaka et al. (2004). We think that the fact may be a big hint to solve the triggering mechanism of magnetic reconnection. We will show the results of our parametric study and discuss possible physical meaning of the threshold value for the explosive evolution.