

## Explosive magnetic island formation in an ion anisotropic current sheet

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<http://sprg.isas.jaxa.jp/researchTeam/spacePlasma/whatsSpacePlasma.html>

We have investigated the effect of initial ion temperature anisotropy on the magnetic reconnection in the Harris-type current sheet with a half thickness of an ion inertial length using three-dimensional (3-D) Particle-in-Cell (PIC) simulations. The ion-to-electron mass ratio is 400. The ion temperature anisotropy  $\alpha_i = T_{i,perp}/T_{i,para}$  ( $T_{i,perp}$  and  $T_{i,para}$  are the ion temperatures perpendicular and parallel to the local magnetic field). As  $\alpha_i = 2, 1.8, 1.5, 1.2,$  and  $1$ , we have found that the reconnection rate decreases, the saturation level falls down, and the magnetic island thickness thins. Our precise inspection has shown that while  $T_{i,zz}$  controls both the reconnection rate and saturation level,  $T_{i,xx}$  determines the size of the magnetic island at the final phase. Detailed analyses will be presented at the meeting.