

イオンスケール電流シート内の磁気リコネクションでの温度異方性の効果

安田 憲生 [1]; 藤本 正樹 [2]; 篠原 育 [3]
[1] 東大・理・地惑; [2] 宇宙研; [3] 宇宙研 / 宇宙機構

The effect of temperature anisotropy on magnetic reconnection in ion-scale current sheet

Norio Yasuda[1]; Masaki Fujimoto[2]; Iku Shinohara[3]
[1] Univ. of Tokyo; [2] ISAS, JAXA; [3] ISAS/JAXA

Due to the presence of magnetic field, space plasma usually has different temperature parallel and perpendicular to magnetic field. This is called temperature anisotropy.

Preceding study indicate that ion anisotropy encouraged explosive growth of magnetic reconnection[tanaka et al, 2011].

Our interest is systematic survey of the growth of reconnection excited in a thick current sheet on several configurations of anisotropy (a_i and a_e).

We have performed 2D-particle in cell (PIC) code. In initial setup, we use Harris current sheet (thickness of current sheet is ion inertia length scale($\sim 2D_i$), and ion-electron mass ratio equal to 100) . Instead of impressing magnetic perturbation in initial condition to start tearing current sheet into magnetic islands, we apply ion and electron anisotropy ($a_{i0} = 1.2^2$, $a_{e0} = 1.2^2$) . And we discuss dependence of thickness of current sheet and ion/electron anisotropy.