



## **Current sheet thinning in near and distant magnetotail by Cluster and THEMIS statistics**

Egor Yushkov (1,2), Anton Artemyev (1,3), and Anatoly Petrukovich (1)

(1) Space Research Institute (IKI), Moscow, Russian Federation (yushkov.msu@mail.ru), (2) Moscow State University, Moscow, Russian Federation, (3) University of California, Los Angeles, USA

We compare thinning and stretching processes for horizontal current sheets in near ( $X \sim -10 R_e$ ) and distant ( $X \sim -20 R_e$ ) magnetotail, using data collected by Cluster and THEMIS spacecraft missions. We study relations between electron and ion currents, plasma densities, lobe and  $B_z$  magnetic fields. We show that both ion and electron temperatures decrease during current sheet thinning and that the most thinning ends (onsets) can be associated with tailward plasma flows. We compare current sheet characteristics immediately before these endings near and far from the Earth. We demonstrate the clear asymmetry in stretching mechanism in the dawn-dusk direction and discuss the possible reasons of this difference. We approximate power-like dependences on  $B_z$  for main current sheet parameters and speculate about models, which can explain these dependences. The investigation is supported by RFBR grant № 18-02-00218.