

# **The effect of longitudinal propagating waves on the particles accelerated in reconnecting current sheet**

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Abstract: Based on the electron and proton acceleration inside the opposite direction of the reconnecting current sheet and the electrostatic wave excited by the drift Maxwell distribution of electrons in Vlasov simulation, we assume that the electrostatic waves propagate opposite to the reconnecting electric field. When the particle's velocity equals to the phase speed of the waves, it will be trapped by waves and has the different accelerating time scale as compared with those untrapped particles. The analytic and test particle simulation (in progress ) will show that the double power law distribution appear .