



Energetic electrons during multiple X line reconnection

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Multiple X line reconnection usually occurs in a long current sheet. Magnetic islands are formed in such a process, and then these islands will interact each other. In this talk, two-dimensional particle-in-cell simulations are performed to study the production of energetic electrons during the evolution of multiple X line reconnection with a guide field. We analyze the contributions of the parallel electric field and Fermi mechanism to electron acceleration during the evolution of magnetic reconnection. The results show that with the magnetic reconnection proceeding, magnetic islands are formed and interact in the simulation domain. Electrons can be accelerated by the parallel electric field in the vicinity of the X lines during the formation and coalescence of magnetic islands, and Fermi acceleration takes place when magnetic islands are contracted. We also investigate how a power-law spectrum of energetic electrons can be formed.