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# Particle-in-cell Simulation of Energy Conversion during Multiple X-lines Reconnection

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Magnetic reconnection efficiently converts magnetic energy into the kinetic and thermal energy of plasmas. It was shown that energy conversion predominantly occurs at the reconnection front in single X-line reconnection. In this presentation, we study the energy conversion in multiple X-lines reconnection by using 2.5-D particle-in-cell simulations. We focus on the issue of where and how are the magnetic energy transferred to plasmas. The multiple X-lines reconnection is characterized by the formation of multiple magnetic islands and the interaction among these islands. We find that the energy conversion rate in multiple X-lines reconnection is much larger than that in reconnection with single X-line. This is caused by the increased number of reconnection fronts in multiple X-lines reconnection. The interaction of multiple magnetic islands, especially the island coalescence, greatly affects the energy conversion. The energy conservation equation is examined around the X-lines, the merging lines of coalescing islands and the reconnection fronts to understand the mechanism of energy conversion.

References
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Note: Abstract should be in 1 page.