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PIC simulation studies of merging processes of spheromak-like and spherical-tokamak-like plasmoids RITOKU HORIUCHI, SHUNSUKE USAMI, National Institute for Fusion Science — Two different types of merging processes of two plasmoids have been examined by means of two-dimensional PIC simulation. One is a counter helicity merging process of two spheromak-like (SP) plasmoids without any guide field component perpendicular to reconnection magnetic field. The other is a merging process of two spherical-tokamak-like (ST) plasmoids with a strong guide field in a reconnection region. In contrast to collisionless reconnection in an open system, most of plasma and energy are confined inside a newly formed plasmoid after the merging in the present simulation. By comparing the simulation results, we have examined the detailed mechanisms of merging and energy transfer processes for two cases, and clarified the guide field dependence. It is found that the merging process is suppressed due to the strong guide field for the ST case, while the EM energy is efficiently transferred to particles through the merging process for the SP case. The detailed mechanism will be discussed in the presentation.

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