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Hall effect on a Merging Formation Process of a Field-Reversed Configuration YASUHIRO KAMINOU, XUEHAN GUO, MICHIAKI INOMOTO, YASUSHI ONO, Graduate School of Engineering, the University of Tokyo, RITOKU HORIUCHI, National Institute for Fusion Sciences — Counter-helicity spheromak merging is one of the formation methods of a Field-Reversed Configuration (FRC). In counter-helicity spheromak merging, two spheromaks with opposing toroidal fields merge together, through magnetic reconnection events and relax into a FRC, which has no or little toroidal field. This process contains magnetic reconnection and a relaxation phenomena, and the Hall effect has some essential effects on these process because the X-point in the magnetic reconnection or the O-point of the FRC has no or little magnetic field. However, the Hall effect as both global and local effect on counter-helicity spheromak merging has not been elucidated. In this poster, we conducted 2D/3D Hall-MHD simulations and experiments of counter-helicity spheromak merging. We find that the Hall effect enhances the reconnection rate, and reduces the generation of toroidal sheared-flow. The suppression of the "slingshot effect" affects the relaxation process. We will discuss details in the poster.

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