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Interaction Between Flux Ropes in Three-Dimensional Simulations of the Solar Corona[1] C.S. NG, T.J. DENNIS, University of Alaska Fairbanks, L. LIN, University of New Hampshire — In three-dimensional (3D) reduced magnetohydrodynamics (RMHD) simulations of the solar corona, interaction between magnetic flux ropes is a fundamental process that leads to current-sheet formation, 3D magnetic reconnection, and coronal heating [Ng et al., ApJ, 747, 109 (2012)]. In the case of long flux ropes, this process essentially reduces to the coalescence of magnetic islands in 2D, which we have also studied extensively using MHD simulations. In the high-Lundquist number limit, which requires high-resolution to simulate, the reconnection rate between the flux ropes becomes small following the Sweet-Parker description, and thus they bounce back and forth while they reconnect. We will present our latest simulations to demonstrate this process, which can potentially have great implications in the generation of Alfvén waves and MHD turbulence.

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