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Plasmoid dynamics in reconnection turbulence M.J. PUESCHEL, P.W. TERRY, University of Wisconsin-Madison, F. JENKO, Max-Planck-Institut fur Plasmaphysik, E. ZWEIBEL, V. ZHDANKIN, University of Wisconsin-Madison, D. TOLD, Max-Planck-Institut fur Plasmaphysik — Circular structures of the parallel current, hereafter referred to as plasmoids, are found to form, merge, and dissipate recurringly in gyrokinetic simulations of driven reconnection turbulence in a strong guide field. A Krook term is used to force the system via a two-dimensional reconnecting current sheet, and the energy thus injected is partly transferred into the plasmoids. The plasmoids, which can be thought of as flux ropes in a guide field scenario, are attracting or repelling each other, depending on the signs of the associated currents; this mechanism, which highlights the importance of temporal effects and intermittency in reconnection setups, is described quantitatively. In this context, dependencies on physical parameters (such as the plasma pressure β or the ion temperature T_i) are compared with linear reconnection physics in current sheets. Another important aspect of plasmoid dynamics is the occurrence of mergers. Such events underscore the need for (gyro)-kinetic descriptions, since it causes the parallel velocity space to undergo a significant departure from the usual Maxwellian distribution.

Paul Terry
University of Wisconsin-Madison

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