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3D PIC investigation of pileup regions in the outflow of magnetic reconnection GIOVANNI LAPENTA, A. VAPIREV, KULeuven, S. MARKIDIS, KTH, M. GOLDMAN, D. NEWMAN, University of Colorado — As the magnetic field energy, the electrons and the ions exit a reconnection region eventually they pile up against the larger scale plasma per-existent around the reconnection region. Recent work has focused on uncovering interesting processes developing there. Satellite crossings in the Earth magnetosphere have identified such regions. In the case of an Earthward propagating flow the pile up region becomes a so-called dipolarization front. The name derives from the tendency of these fronts to re-establish a more dipolar-like field closer to the Earth, when compared with the pre-existing stretched configuration of the magnetotail. We have recently conducted a fully 3D PIC study [1] of these regions. Here we focus on new 3D diagnostics designed to identify topological features and investigate the processes of energy exchange and particle dynamics.

[1] Vapirev, A. E., et al. "Formation of a transient front structure near reconnection point in 3D PIC simulations." Journal of Geophysical Research: Space Physics (2013).

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