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Plasma Flows Associated with a Flux Ropes Experiment[1] TIMOTHY DEHAAS, WALTER GEKELMAN, PATRICK PRIBYL, BART VAN COMPERNOLLE, University of California, Los Angeles, SARAH SMOLENSKI, University of California, Riverside — Magnetic flux ropes are braided magnetic fields associated with helical currents. They are found near the solar surface and are associated with coronal mass ejections. In this experiment, two adjacent flux ropes (I_{rope}=50 amps, Δy=1 cm, L_{rope}=10 m) are formed in the LAPD at UCLA (B_o=330 G, n_o=2x10^{12} cm^{-3}, T_e=4 eV, He). The ropes are fully ionized with electron T_e 10 eV and n_{rope}=10^{13} cm^{-3}. Three-axis magnetic and mach probes are used to measure the volumetric magnetic field and to concentrate on measuring the three-dimensional flow fields. Since the ropes are kink unstable,[2] correlation functions using two probe sets are utilized. Previous observations[3] showed that the field lines move through the quasi-separatrix layer while the ropes reconnect. The flow field is key to the analysis, in light of recent theories of slip-running reconnection.[4]

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[3]Gekelman, W.; Lawrence, E.; Van Compernolle, B. 2012, ApJ, 753, 131.
[4]Auliener, G.G.; Pariat, E.; Demoulin, P.; Devore, C; 2006, Sol. Phys. 238, 347.

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