Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

**Interactions between magnetic flux ropes**[1] WALTER GEKELMAN, BART VAN COMPERNOLLE, Dept. of Physics, University of California — Magnetic flux ropes are structures, which consist of magnetic field lines with pitch varying with radius across the rope, a result of currents flowing along the field. They exist in abundance in the solar corona and have been observed by satellites near the earth. They often exist in pairs or triplets. Flux ropes have been produced and the interaction and reconnection between two ropes has been studied in detail in the LAPD device at UCLA. In this experiment the space-time behavior of three kink unstable flux ropes in a background magnetoplasma are studied. The ropes twist about each other and themselves as well as collide with one another. The ropes are line tied on one end and are free to move at the other end, where they are observed to rotate around the background magnetic field. The quasi-separatrix layers (regions in which magnetic field line reconnection occurs and neighboring field lines diverge) associated with the ropes are derived from the 3D data and their motion and topology is studied. LIF measurements indicate significant ion heating in the ropes. Swept Langmuir probe measurements indicate large density and temperature changes. These give rise to large amplitude drift waves.

[1]Work done at The Basic Plasma Science Facility at UCLA (supported by NSF and DOE) and the University of Michigan.

Walter Gekelman
Dept. of Physics, University of California

Date submitted: 12 Jul 2011 Electronic form version 1.4