

Abstract Submitted
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Controlled Laboratory Experiments on expanding magnetic flux ropes¹ MIO NAKAMOTO, WALTER GEKELMAN, University of California, Los Angeles, JAMES CHEN, Naval Research Laboratory, PATRICK PRIBYL, University of California, Los Angeles, KEVIN CONNOLLY, Reed College — A laboratory experiment which was designed to study the expansion of a magnetic flux rope in a geometry similar to that of Coronal Mass Ejections (CME) is underway at UCLA. A 10 cm cathode and adjacent, movable anode are placed at the lower edge of a plasma column in a three meter long, one meter diameter plasma column. The cathode and anode, which constitute the stationary footprints of the flux rope during each run, are housed within solenoidal magnets (oriented at right angles to the device axis) are pulsed at the same (1 Hz) repetition rate as the background plasma ($n = 10^{12} \text{ cm}^{-3}$, $\text{Dia} = 30 \text{ cm}$, $200 \text{ G} < B_z < 700 \text{ G}$). The arched and magnetized flux rope rises into the background plasma. The experiment is diagnosed with magnetic probes, Langmuir probes and Mach probes. The issues to be addressed are the relationship between the flux rope and ambient magnetic field. The experiment will examine the scaling of the acceleration and expansion of the flux rope and the separation of the anode/cathode (flux rope footprints) as well as heating and coupling of the flux rope and ambient plasma.

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