

Abstract Submitted
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First Plasmas in the Wheaton Impulsive Reconnection eXperiment (WIRX) D. STAPLETON, D. BLASING, D. COSTER, D. CRAIG, J. DAHLIN, Wheaton College, Wheaton IL USA — WIRX is a new experiment that will be studying the three dimensional and impulsive aspects of reconnection. The experiment is composed of two parallel electrodes, linked by a magnetic arcade that is generated by a coil surrounding the electrodes. First plasmas were obtained in April of 2009. A preliminary exploration of WIRX parameter space is presented. An adjustable high power resistor is installed in series with the plasma, allowing plasma currents from 0.5 to 11 kA. A full range of magnetic field strengths are tested from 80 to 400 Gauss. Fueling from one end of the cathode and along the cathode has been investigated. Both allow breakdown with at least 800V across the electrodes but the second allows a longer arcade along the electrodes. The resistance of the plasma exhibits an upper boundary that falls with increased plasma current. Plasma instability is expected to increase with the ratio of plasma current over coil current. Experimental results show a sharp transition between stability in the plasma and instability. Fast camera images of plasmas will be compared with these experimental results. Work supported by U.S.D.O.E. grant DE-FG02-08ER55002.

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