

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

First Results from the Wheaton Impulsive Reconnection Experiment D. CRAIG, D. BLASING, D. COSTER, J. DAHLIN, D. STAPLETON, Wheaton College, Wheaton IL USA — A new experiment for the study of impulsive magnetic reconnection in three dimensions began operation in Spring 2009. The experiment is composed of two parallel electrodes, linked by a magnetic arcade that is generated by a coil surrounding the electrodes. Plasma current I has been varied from 0.5 kA to 11 kA and the startup magnetic field B has been independently varied from 0 to 400 Gauss. A large ratio of I/B is expected to result in instability and potentially reconnection. As this ratio is increased, we observe a sharp transition towards higher fluctuation levels. Two different fueling configurations have been explored - distributed fueling along the cathode and fueling from one end of the cathode. Distributed fueling resulted in discharges extending further down the length of the electrodes. Intensified CCD cameras explore the formation and subsequent evolution of the discharge. Pinhole photodiode array cameras are being constructed to measure emission profiles throughout a single shot. Work supported by U.S.D.O.E. grant DE-FG02-08ER55002.

Darren Craig
Wheaton College

Date submitted: 17 Jul 2009

Electronic form version 1.4