Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Effects of different electrode configurations in the plasma rotation of Magneto Bernoulli eXperiment (MBX) H.J. QUEVEDO, P.M. VALANJU, JEREMY MURPHY, ROGER D. BENGTSON[1], The University of Texas at Austin
— MBX is an experiment that combines a small mirror machine and a radial electric field to create a rotating plasma. In the present stage of the experiment a low density plasma has been successfully rotated at supersonic speeds using a 1kV-80mF capacitor bank with currents of order 10 amps. However, certain conditions turn out to be inefficient in rotating the plasma because the external potential does not fully penetrate inside the plasma. The magnetic lines do not behave as equipotentials which seriously limits the rotation speed of the bulk plasma. Different configurations of electrodes have been used and results of the characteristics of the plasma profiles achieved will be shown. We will present data describing asymmetry between electrode polarities, smothing effects of electrode sheaths, fluctuations generated by shear flow, and overall penetration of the applied potential. The set of plasma measurements consists of Langmuir, Mach and floating potential probes, photo diodes and spectroscopy.

[1]Research supported by DE-FG02-03ER54697

Roger D. Bengtson
The University of Texas at Austin

Date submitted: 19 Jul 2005 Electronic form version 1.4