Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Measuring drift velocity and electric field in mirror machine by fast photography ILAN BE'ERY, OMRI SEEMANN, Physics Department, Technion, Haifa 32000, Israel, AMNON FRUCHTMAN, Faculty of Sciences, H.I.T. - Holon Institute of Technology, Holon 58102, Israel, AMNON FISHER, AMIRAM RON, Physics Department, Technion, Haifa 32000, Israel — The flute instability in mirror machines is driven by spatial charge accumulation and the resulting E×B plasma drift. E×B drift due to external electrodes can be used as a stabilizing feedback mechanism. In order to measure the plasma drift and the internal electric field distribution we used fast photography to visualize Hydrogen plasma in a small mirror machine. We use incompressible flow and monotonic decay assumptions to deduce the velocity field from the evolution of the plasma cross section. The electric field perpendicular to the density gradient is then deduced from E=-V×B. Using this technique we measured the electric field of the flute instability and the field induced by electrodes immersed in the plasma.

Ilan Be'ery
Physics Department, Technion, Haifa 32000, Israel

Date submitted: 26 Jul 2012 Electronic form version 1.4