Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Structure of Helimak Turbulence[1] DYLAN MIRACLE, J. FELKL, K.W. GENTLE, K. LEE, Fusion Research Center, University of Texas, Austin, J.C. WILEY, Institute for Fusion Studies, University of Texas, Austin — The Helimak is a good realization of a sheared cylindrical slab with open field lines. The plasma is heated by microwaves at the electron cyclotron resonance. The resulting pressure and potential gradients give drift and fluid instabilities that drive fluctuations in density and potential. Both density and potential structures are studied by two dimensional arrays of Langmuir probes placed in the cross field plane. The structures observed are compared to those predicted by simulations of the DIppolito-Krasheninikov equations. The simulations show turbulence produced by a combination of Raleigh-Taylor and Kelvin-Helmholtz instabilities. In addition we compare our statistical characterization of turbulence to the predictions of drift turbulence. Finally we will look at the change in the two dimensional structures as we drive flows that shear the turbulence and stabilize the fluctuations in the Helimak plasma.

[1]Work supported by the Department of Energy Office of Fusion Energy Sciences DE-FG03-00ER54609.

Dylan Miracle
Fusion Research Center, University of Texas, Austin

Date submitted: 24 Jul 2006 Electronic form version 1.4