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Helimak Turbulence and Simulation[1] D. MIRACLE, J. FELKL, K. LEE, K.W. GENTLE, University of Texas at Austin, Fusion Research Center — 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. Simulations of the D'Ippolito-Krasheninikov equations show turbulence produced by a combination of Rayleigh-Taylor and Kelvin-Helmholtz instabilities. We compare the statistical properties of the turbulence in the simulation with the measured turbulence of the experiment. We present improvements to models used in codes to represent the physics of the Helimak more accurately. The two dimensional structures in density and floating potential are compared to those predicted by the simulation.

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