Abstract Submitted
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Simulation of Blob Turbulence in Helimak[1] J.C. WILEY, M. KOTSCHENREUTHER, P. VALANJU, IFS, D. MIRACLE, K. LEE, J. FELKL, K. GENTLE, FRC U. of Texas at Austin — The Helimak appears to be an accessible realization representing only the essential features of the plasma condition described by the blob SOL model[1]. Comparing predictions of this model with experimental results tests the model's validity and provides a basis for using the model in divertor design. We have extended the model to include parallel physics while retaining the 2D character[2]. Here we compare results from a 2D finite element simulation including relevant atomic processes to measurements of profiles and turbulence in a Helimak. Results show systematic agreement with the experimental measurements for electron temperature and density profiles, and fluctuation power spectra as the helical pitch, applied power, and fill gas are varied. Profiles show in/out asymmetry consistent with blob transport. At short connection lengths which correspond to weaker turbulence, a distinct peak in the power spectra appears in both the experiment and simulation. This peak disappears with longer connection lengths and stronger turbulence. The frequency of this peak depends on the fill gas.
1. D. A. D'Ippolito, et al., Phys. Plasmas **9** 222-233 (2002)
2. J. C. Wiley, et al. Sherwood Theory Conf. 2005.

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