

Abstract Submitted
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Edge Profile Evolving Plasma Turbulence Simulations¹ BO LI, DARIN ERNST, Massachusetts Institute of Technology — We have developed a fluid edge turbulence code for the simulation of scrape off layer turbulence in a tokamak device. The fluid model is based on simplified drift-ordered Braginskii equations. The code is radially global, field-line following, and flux driven. The simulations evolve the density, temperature and electric potential within an initially simplified fluid framework. No separation is made between perturbations and equilibrium. Plasma profiles are evolved self-consistently in response to the heat and particle sources, subject to the cross-field transport produced by plasma instabilities, and plasma losses at the sheath resulting from sonic scrape-off layer flows. The simulation domain includes both closed and open field line regions. A strong curvature-driven interchange instability is observed on the low field side of pressure profile, which develops turbulent structures in the nonlinear phase resembling blobs.

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