

Abstract Submitted
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On flow structures and the hierarchy of shears G. DIF-PRADALIER, P.H. DIAMOND, C.J. MCDEVITT, UCSD, Y. SARAZIN, V. GRANDGIRARD, X. GARBET, CEA/IRFM, C.S. CHANG, S. KU, NYU — We investigate the consequences of mean profile dynamics in flux-driven gyrokinetics. We report the emergence of a novel flow structure in plasma turbulence, which we call the “ExB staircase.” This structure connects to strong, standing corrugations in the plasma profiles, which is not related to rational q surfaces. We also show that the ExB shear associated to these mean profile corrugations is strongly dominant as compared to the usually-invoked zonal flow shear. Discussion of the dynamics of mean profiles (i) as another channel for turbulence regulation, missing in “usual” gyrokinetic approaches, (ii) its connection with turbulent stresses and the transport of potential vorticity, its link (iii) to the observed flow patterns and (iv) to the question of locality vs non-locality in transport is presented.

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