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Gyrokinetic Edge Turbulence BRUCE SCOTT, Max-Planck-Institut fuer Plasmaphysik — Edge turbulence is computed using a generalised fluxtube delta-f gyrokinetic formulation. Energetic consistency in the model is reviewed. Gradient terms provide drive, and collisions and subgrid dissipation provide saturation. Full flux-surface edge turbulence results are obtained with realistic scale separation. Instabilities occur at the scale of several ion gyroradii, while nonlinear redistribution fills the spectrum. A key feature of edge turbulence is the strong nonlinearity: all available degrees of freedom are maintained at finite amplitude, most especially a long-wave shear-Alfven component. Transport scaling of the turbulence is determined more by saturation through this component than the drive. In the turbulence, the dominant drive is by a long-wave MHD which is self maintained but is very weak in the linear regime. The resulting scaling qualitatively diverges from the linear growth rates. Electron trapping is found to enhance the turbulence without changing its character, which is very similar to the results of gyrofluid computations at the same parameters.

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