Role of the pressure gradient in the generation and evolution of the plasma edge turbulence in RFX-mod

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The edge region of magnetically confined plasmas is characterised by the presence of strong gradients which can act as source of free energy for the development of fluctuations and coherent structures.

The role of the electron pressure gradient in the generation, evolution and control of the edge turbulence in RFX-mod reversed field pinch experiment is discussed. In RFX-mod the edge turbulence is measured by the spectroscopic GPI diagnostic and by a set of electrostatic probes, in order to characterise it both in time and space.

A strong correlation between the characteristic electron pressure length $L_p = -\frac{P}{\nabla P}$ and the radial correlation length of the edge turbulence is shown, suggesting that L_p could control the radial dimensions of the edge structures. The spatial scale where the energy enters the system feeding the turbulence in a Kolmogorov-like picture is compared with L_p, and the link between the edge fluctuations level and the pressure gradient is discussed. Also the interplay of the boundary magnetic topology with the edge profiles, structures and flow is studied, in particular the role of X-point and O-point of boundary m=0 magnetic structures.