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Universal properties of the edge turbulence in different fusion experiments and its driving mechanisms MATTEO AGOSTINI, P. SCARIN, N. VIANELLO, R. CAVAZZANA, F. SATTIN, G. SERIANNI, M. SPOLAORE, Consorzio RFX, Padova, Italy, R. MAQUEDA, Nova Photonics, New Jersey, USA, S. ZWEBEN, PPPL, Princeton, New Jersey, USA, B. LABOMBARD, J. TERRY, MIT-PSFC, Massachusetts, USA, Y. YAGI, H. SAKAKITA, H. KOGUCHI, S. KIYAMA, Y. HIRANO, AIST, Japan — The edge turbulence of different plasma fusion devices (Tokamaks and Reversed Field Pinches) is studied by means of the Gas Puff Imaging (GPI) diagnostic and Langmuir probes. It is shown that the Probability Density Functions (PDF) of edge fluctuations depend on the time scales of the fluctuations themselves: they are clearly non-Gaussian for smaller time scale fluctuations, and become Gaussian for larger ones. This indicates that the turbulence has an intermittent behaviour in all the devices. This deviation from the Gaussian distribution is due to the presence in the GPI signals of strong emission bursts associated with coherent structures. The time scale where the PDF becomes Gaussian is linked with the turbulence injection scale, consistent with energy cascade that generates structures at smaller and smaller time scales. The different injection scales for the different experiments are linked with the characteristic length of the electron pressure profile, which should act as source of free energy for the turbulence.

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