Shear effect on edge turbulence during the L-H transition in JET and ASDEX Upgrade plasmas

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[a)] *For a list of members, see Appendix of A. Kallenbach et al, Nucl. Fusion **57** 102015 (2017)*

[b)] *For a list of members, see Appendix of X. Litaudon et al Nucl. Fusion **57** 102001 (2017)*

[c)] *For a list of members, see Appendix of H. Meyer et al, Nucl. Fusion **57** 102014 (2017)*

It is widely accepted that the improvement of the confinement in an L to H-mode transition is the result of the suppression of the edge turbulence and that the radial electric field (Er) plays a key role in the explanation of transport. In fact, sheared poloidal flows can influence the turbulence via shear decorrelation mechanisms and, as a consequence, modify the induced transport. We have performed high radial resolution turbulence measurements using fast frequency swept reflectometry which is especially well suited for the study of the narrow pedestal region. Measurements during intermediate transitions, such as the I-phase in AUG and the M-mode in JET plasmas, have been performed. These L to H transition phases allow following the evolution of the turbulence and the mechanisms involved as they can provide time for statistics. We observe that both I-phase and M-mode offer similar characteristics in the modifications of their turbulence frequency spectra, changing from broadband to coherent modes in the pedestal region along with the deepening of the diamagnetic contribution of the radial electric field well. Moreover, a detailed analysis of the complex reflected signal displays a single side band feature at low frequency around few kHz and reverses of sign radially. This feature is discussed in terms of eddy tilting in changing ExB shear flow. The result is consistent with previous observations [1] of eddy breaking and tilting by edge sheared flows and could be the cause [2] for the observed particle transport reduction.

[1] I. Shesterikov *et al.* Phys. Rev. Letter 111, 055006 (2013)

[2] P. Manz, Phys *et al.* Rev. Letter 103, 165004 (2009)