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P5.1069 Inner versus outer ExB shear layer: an attempt to radially localize the L-H transition

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The importance of the E × B flow shear in the transition from the low (L-) to the high (H-) confinement mode is well and widely appreciated [1]. At the edge of tokamaks, the E × B velocity profile shows two shear layers: the "inner" one is located within the confined region and is related to the ion pressure gradient while the "outer" layer is influenced by the plasma potential in the SOL, which is set by the divertor sheath. Both edge shear layers can in principle trigger the L-H transition but it is not yet clear which is the dominant one.
In this work, a direct radial localization of the turbulence suppression at the L-H transition via Doppler Reflectometry (DR) is attempted. Discharges with repetitive L-H-L dithers at a frequency of 200 Hz have been designed to measure the turbulence level at different radial locations by varying the DR sampling frequency. An initial turbulence suppression at $\rho = 0.975$ could be identified and is located, based on the associated evaluations of the v_E×B profile, at the inner shear layer. However, the v_E×B profile from DR does not agree with the Charge Exchange Recombination Spectroscopy (CXRS) evaluations. This discrepancy is interpreted by the influence of strongly intermittent events on the DR signal.

References
[1] H. Biglari et al., Physics of Fluids B: Plasma Physics, vol. 2, 1-4 pp, 1990

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