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Interplay between turbulence, neoclassical and zonal flows during the L-H transition at ASDEX Upgrade M. CAVEDON, T. PÜTTERICH, E. VIEZZER, G. BIRKENMEIER, T. HAPPEL, P. MANZ, F. RYTER, U. STROTH, Max-Planck-Institute for Plasma Physics, Boltzmannstr. 2, D-85748 Garching, Germany, ASDEX UPGRADE TEAM — It is widely accepted that the $E \times B$ velocity shear is responsible for the suppression of the edge turbulence, thus leading to the transition from L- to H-mode. However, the origin and the evolution of the edge radial electric field (E_r) profile and the accompanying $E \times B$ flow is still debated. The $E \times B$ flow may be generated by turbulence stresses or by collisional (neoclassical) processes via the main ion pressure gradient. A recent upgrade of the charge exchange recombination spectroscopy diagnostic at ASDEX Upgrade provides a full reconstruction of the impurity density, temperature and E_r profiles at $100\,\mu$s time resolution and allows the evaluation of the fast dynamics of these quantities during the L-H transition. The behaviour of E_r and the ion profiles during the L-H transition will be presented for discharges with different L-H power thresholds obtained via different electron densities, a B_t-scan and a change of isotope (deuterium and hydrogen). A comparison of neoclassical and of measured E_r profiles to the evolution of the turbulent fluctuation points to a leading role of neoclassical flow in the L-H transition.

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