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The role of divertor collisionality on SOL transport: a study on the ITER stepladder D. CARRALERO, H.W. MÜLLER, IPP Garching, Germany, M. GROTH, Aalto University, Espoo, Finland, M. KOMM, J. ADAMEK, IPP.CR, Praha 8, Czech Republic, G. BIRKENMEIER, IPP Garching, Germany, M. BRIX, JET-EFDA, Culham Science Center, F. JANKYC, P. HACEK, IPP.CR, Praha 8, Czech Republic, S. MARSEN, IPP, Greifswald, Germany, F. REYMOLD, IPP Garching, Germany, C. SILVA, Institute of Plasmas and Nuclear Fusion, IST, Lisbon, Portugal, U. STROTH, M. WISCHMEIER, E. WOLFRUM, IPP Garching, Germany, ASDEX UPGRADE TEAM, COMPASS TEAM, JET TEAM — The L-mode SOL density transition is experimentally investigated in three tokamaks of the ITER stepladder (COMPASS, AUG and JET). The results confirm the relevance of divertor detachment in the SOL profile transition: Both AUG and JET show significant changes in the outer midplane density profiles and increase in the size and velocity of filaments at the same densities in which the LFS divertor surpasses its ion saturation roll-over. Meanwhile, the COMPASS divertor remains attached and no clear signs of transition are observed in the midplane. Furthermore, according to a filament model by Myra et al., only the changes of collisionality in the divertor are sufficient to trigger the transition in both cases. An extrapolation from these results indicates that this broadening is to be expected in ITER despite having a collisionless SOL in the main chamber, since the disconnection of filaments will take place in the partially detached divertor.

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