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Scrape-off layer transport as boundary conditions for edge rotation NICOLAS FEDORCZAK, GEORGE TYNAN, CER / CMTFO, PASCALE HENNEQUIN, LPP — Recently, experimental studies of SOL flows phenomena have revealed the influence of such flows in the dynamics of intrinsic rotation in L-mode and the threshold of L-H transition[1][2]. Since the phenomena in question occurs in L-mode, the explanation must take into account turbulence and turbulent transport to figure out the interaction of SOL flows on core rotation and electric field shear prior to the transition. Here we explore the possibility that SOL flows (parallel and transversal) exert a turbulent stress on the confined plasma near the last closed flux surface. Namely we focus on the inward turbulent transfer of SOL parallel momentum driven by ballooning particle flux [3], and the effect of magnetically sheared ballooning structures on the establishment of a net radial flux of poloidal momentum across the LCFS. A preliminary model is derived and compared to measurements of edge velocity increments when the SOL topology is changed from LSN to USN (or equivalent with limiters) in Tore Supra and DIII-D.

- [1] B. LaBombard et al. Nucl. Fusion 44,(2004)
- [2] P. Hennequin et al. EPS 2010
- [3] N. Fedorczak et al. J. Nucl. Mater. 2011

Nicolas Fedorczak
CER / CMTFO

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