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Investigation of edge ExB sheared flow development in the TJ-II stellarator M. ANGELES PEDROSA, Laboratorio Nacional de Fusion, Spain, ARTURO ALONSO, EDUARDO CALDERÓN, Laboratorio Nacional de Fusion, Spain, ALEXANDER A. CHMYGA, NICOLAI B. DREVAL, Institute of Plasma Physics, Ukraine, LEONID ELISEEV, Institute of Nuclear Fusion, Russia, TERESA ESTRADA, CARLOS HIDALGO, Laboratorio Nacional de Fusion, Spain, LUDMILA KRUPNIK, Institute of Plasma Physics, Ukraine, ALEXANDER V. MELNIKOV, Institute of Nuclear Fusion, Russia, ROBERTO OCTAVIO OROZCO, JOSE LUIS DE PABLOS, Laboratorio Nacional de Fusion, Spain, STEWART J. ZWEBEN, Princeton Plasma Physics Laboratory, USA — Experiments carried out by means of Langmuir probes in the TJ-II stellarator have shown that above a plasma density threshold the level of turbulence decreases with a concomitant development of ExB perpendicular sheared flow (i.e. naturally occurring shear layer). The effect of density on sheared flows has been observed in different plasma magnetic configurations and regimes [1, 2]. The reversal in the ExB rotation has been 2-D visualized using Ultra Fast Speed cameras. Estimated velocity of observed blobs, rotating predominantly in the perpendicular direction, is in the range of 10^3–10^4 m/s. Heavy Ion Beam Probe and reflectometry measurements also show a strong dependence of edge radial electric fields and plasma rotation with plasma density. [1] C. Hidalgo et al., Phys. Rev. E 70 (2004) 067402. [2] M.A. Pedrosa et al., Plasma Phys. Control. Fusion 47 (2005) 777.

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