Abstract Submitted
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Gyrokinetic Simulations of JET Carbon and ITER-Like Wall Pedestals[1] DAVID HATCH, MIKE KOTSCHENREUTHER, SWADESH MAHAJAN, XING LIU, AUSTIN BLACKMON, IFS, UT-Austin, CARINE GIROUD, JON HILLESHEIM, COSTANZA MAGGI, SAMULI SAARELMA, CCFE, Culham Science Centre, Abingdon OX14 3DB UK, JET CONTRIBUTORS TEAM[2] — Gyrokinetic simulations using the GENE code are presented, which target a fundamental understanding of JET pedestal transport and, in particular, its modification after installation of an ITER like wall (ILW). A representative pre-ILW (carbon wall) discharge is analyzed as a base case. In this discharge, magnetic diagnostics observe washboard modes, which preferentially affect the temperature pedestal and have frequencies (accounting for Doppler shift) consistent with microtearing modes and inconsistent with kinetic ballooning modes. A similar ILW discharge is examined, which recovers a similar value of H98, albeit at reduced pedestal temperature. This discharge is distinguished by a much higher value of eta, which produces strong ITG and ETG driven instabilities in gyrokinetic simulations. Experimental observations provide several targets for comparisons with simulation data, including the toroidal mode number and frequency of magnetic fluctuations, heat fluxes, and inter-ELM profile evolution. Strategies for optimizing pedestal performance will also be discussed.

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[2]See the author list of X. Litaudon et al 2017 Nucl. Fusion 57 102001

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