Abstract Submitted
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MHD stability of ITER H-mode confinement with pedestal bootstrap current effects taken into account[1] L.J. ZHENG, M.T. KOTSCHENREUTHER, P. VALANJU, S.M. MAHAJAN, D. HATCH, X. LIU, Institute for Fusion Studies, University of Texas at Austin — We have shown that the bootstrap current can have significant effects both on tokamak equilibrium and stability (Nucl. Fusion **53**, 063009 (2013)). For ITER H-mode discharges pedestal density is low and consequently bootstrap current is large. We reconstruct numerically ITER equilibria with bootstrap current taken into account. Especially, we have considered a more realistic scenario in which density and temperature profiles can be different. The direct consequence of bootstrap current effects on equilibrium is the modification of local safety factor profile at pedestal. This results in a dramatic change of MHD mode behavior. The stability of ITER numerical equilibria is investigated with AEGIS code. Both low-n and peeling-ballooning modes are investigated. Note that pressure gradient at pedestal is steep. High resolution computation is needed. Since AEGIS code is an adaptive code, it can well handle this problem. Also, the analytical continuation technique based on the Cauchy-Riemann condition of dispersion relation is applied, so that the marginal stability conditions can be determined. Both numerical scheme and results will be presented. The effects of different density and temperature profiles on ITER H-mode discharges will be discussed.

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