Abstract Submitted
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Extrapolation of the DIII-D high poloidal beta scenario to ITER steady-state using transport modeling[1] J. MCCLENAGHAN, ORAU, A.M. GAROFALO, O. MENEGHINI, S.P. SMITH, General Atomics — Transport modeling of a proposed ITER steady-state scenario based on DIII-D high β_P discharges finds that the core confinement may be improved with either sufficient rotation or a negative central shear q-profile. The high poloidal beta scenario is characterized by a large bootstrap current fraction($\sim$80%) which reduces the demands on the external current drive, and a large radius internal transport barrier which is associated with improved normalized confinement. Typical temperature and density profiles from the non-inductive high poloidal beta scenario on DIII-D are scaled according to 0D modeling predictions of the requirements for achieving Q=5 steady state performance in ITER with "day one" HCD capabilities. Then, TGLF turbulence modeling is carried out under systematic variations of the toroidal rotation and the core q-profile. Either strong negative central magnetic shear or rotation are found to successfully provide the turbulence suppression required to maintain the temperature and density profiles.

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