Abstract Submitted
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Dependence of Critical Rotational Shear on Density and Toroidal Magnetic Field in DIII-D QH-mode Discharges[1] T.M. WILKS, MIT PSFC, K.H. BURRELL, XI CHEN, R.J. GROEBNER, GA, J.W. HUGHES, MIT PSFC — Quiescent H-mode (QH-mode) has been identified as an attractive stationary operational regime in tokamaks due to the lack of edge localized modes (ELMs) in conjunction with good particle and impurity control due to the presence of an edge harmonic oscillation (EHO). The EHO allows operation of the QH mode edge near but also below the peeling-ballooning ELM stability limit, and has been shown to have a dependence on the edge rotational shear. Previous analysis has demonstrated the existence of a critical edge rotational shear necessary for the existence of typical low-n EHO MHD activity, particularly with the transition to a wide pedestal regime with broadband turbulence. We build upon these results by further exploring critical edge rotational shear existence for the transition from a QH-mode to a typical ELMy H-mode in DIII-D, along with its associated turbulence and dependence on collisionality.

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