Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Nonlinear MHD study on the influence of EB flow in QH-mode plasma of DIII-D[1] FENG LIU, Universit Cte dAzur CASTOR/Inria Sophia-Antipolis, France, GUIDO HUIJSMANS, CEA, IRFM, F-13108 Saint-Paul-Lez-Durance, France, ALBERTO LOARTE, ITER organization, ANDREA GAROFALO, WAYNE SOLOMON, General Atomics, P.O. Box 85608, San Diego, California 92186-5608, USA, BONIFACE NKONGA, Universit Cte dAzur CASTOR/Inria Sophia-Antipolis, France, MATTHIAS HOELZL, 6Max Planck Institute for Plasma Physics, 85748 Garching, Germany — In QH-mode experiments with zero-net NBI torque show that there remains a finite EB rotation in the pedestal region implying that a minimum EB flow or flow shear is required for the plasma to develop the Edge Harmonic Oscillation (EHO), which is a saturated KPM (kink-peeling mode) characteristic of the QH-mode. To understand the roles of EB flow and its shear in the saturation of KPMs, non-linear MHD simulations of DIII-D QH-mode plasmas including toroidal mode numbers n = 0 to 10 with different EB rotation speed have been performed. These simulation show that ExB rotation strongly stabilizes high-n modes but destabilizes low-n modes (particularly the n=2 mode) in the linear growth phase, which is consistent experimental observations and previous linear MHD modelling.

[1]US DOE under DE-FC02-04ER54698

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Date submitted: 18 Jul 2017 Electronic form version 1.4