Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Imaging of Boundary Plasma Displacements During RMPs in DIII-D[1] R.A. MOYER, D.M. ORLOV, UCSD, T.E. EVANS, N. FERRARO, J. KING, T. STRAIT, C. PAZ-SOLDAN, GA, A. WINGEN, ORNL, R. NAZIKIAN, B. GRIERSON, PPPL, L. ZENG, UCLA — Visible imaging is used to measure the boundary displacement due to n = 2 and n = 3 RMPs in H-mode plasmas in DIII-D. Displacements ≈2 cm on the outer midplane are measured in LSN H-modes using active imaging of Doppler shifted deuterium beam emission with n = 2 RMPs rotating in the co-current direction [1] where the kink response is expected to be maximized. In contrast, displacements due to static n = 3 RMPs are ≈4 mm in similar LSN H-modes, with no measurable change when the n = 3 RMP phase is "flipped" by 60° toroidally. Plasma shape is also found to have a strong effect on the plasma response: n = 3 RMPs in Double Null Divertor plasmas are ≈2 mm, 10x smaller than the displacements in similar LSN plasmas, consistent with magnetics measurements. We will compare boundary displacements measured with active beam emission and passive C III imaging to separatrix manifold displacements and kink response in plasma response models.

[1] R.A. Moyer, et al., Nucl. Fusion **52** 123019 (2012)

[1]Work supported in part by the US DOE under DE-FG02-05ER54809, DE-AC05-06OR23100, DE-FC02-04ER54698, DE-AC05-00OR22725, DE-AC02-09CH11466, DE-FG02-08ER54984

R.A. Moyer
UCSD

Date submitted: 10 Jul 2014 Electronic form version 1.4