Measurement of Plasma Displacement Due to Resonant Field Amplification in High Beta DIII-D Plasmas Using CER Spectroscopy

M.J. LANCTOT, A.M. GAROFALO, H. REIMERDES, G.A. NAVRATIL, Columbia U., M. OKABAYASHI, W.M. SOLOMON, PPPL, G.L. JACKSON, R.J. LA HAYE, E.J. STRAIT, General Atomics, Y. IN, FAR-TECH, Inc. — In a plasma with beta above the no-wall limit, externally applied magnetic perturbations can couple to the rotationally stabilized RWM via resonant field amplification [1]. This phenomenon is routinely exploited in the technique of active MHD spectroscopy to test the stability of the RWM [2]. We utilize measurements of the ion temperature from charge exchange recombination spectroscopy at two toroidal locations during MHD spectroscopy experiments to obtain a direct measurement of the \( n = 1 \) plasma fluid displacement due to the RFA. The displacement profiles are compared with those expected for the stabilized RWM.


1Supported by the US DOE under DE-FG02-89ER53297, DE-AC02-76CH03072, DE-FC02-04ER54698, and DE-FG02-03ER83657, and the Fusion Energy Science Fellowship.

E.J. Strait
General Atomics

Date submitted: 23 Jul 2006

Electronic form version 1.4