

**Abstract Submitted for the Forty-Sixth Annual Meeting
Division of Plasma Physics
November 15–19, Savannah, Georgia**

Category Number and Subject: 5.6.2 DIII-D Tokamak

Theory Experiment

A Closer Look at Transient Improvement of Transport Near Rational q_{\min} in DIII-D Discharges,* M.E. Austin, K.W. Gentle, *University of Texas*, K.H. Burrell, T.C. Luce, *GA*, T.L. Rhodes, *UCLA*, R.J. Jayakumar, M.A. Makowski, *LLNL* – DIII-D L-mode discharges with negative central shear often exhibit transient improvement in electron, ion, and rotational transport during the current ramp up as q_{\min} traverses rational values, particularly $q_{\min} = 2$. Recent upgrades to CER and FIR scattering diagnostics provide us with a more detailed picture of these events. It is seen that the abrupt increases, in ion temperature and toroidal rotation are preceded by a short period where the central values of these quantities decrease sharply. The low-k FIR scattering channel shows the decrease to correlate with an upward-chirping coherent mode that comes before the MHD burst associated with q_{\min} crossing a rational value. Similar chirping modes appear after the q_{\min} crossing time. The temperature rise phase correlates with an 8-12 ms period without any coherent mode activity observed in the low-k spectrogram. The origin of the observed modes and their implications for transport are discussed.

*Supported by U.S. DOE under DE-FG03-97ER54415, DE-FC02-04ER54698, and DE-FG03-01ER54615.