Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

**Analysis of Sawtooth Post-Cursor Oscillations in Low Safety Factor DIII-D Plasmas**[1] J.D. CABRERA, U. California Irvine, C. PAZ-SOLDAN, E.J. STRAIT, General Atomics, D. SHIRAKI, Oak Ridge National Laboratory —
Large sawtooth oscillations are a commonly observed phenomenon in very low safety factor ($q_{95}$ ∼2) plasmas. Following the sawtooth crash phase, low frequency (∼200 Hz) post-cursor oscillations in the magnetic field, with amplitudes ∼2 G decaying in time, are excited. These post-cursor oscillations do not exhibit the usual m=odd poloidal structures of sawtooth oscillation, but instead are found to be m=even in structure, suggesting the excitation of global kink modes. A novel means of modeling such post-cursor oscillations is presented via computational analysis of data obtained from high-resolution magnetic sensors installed at the DIII-D tokamak facility. Nonlinear regression analysis is used to obtain modeling parameters such as rates of decay and rotation. Trends in parameters over many oscillations are then compared with equilibrium plasma parameters. The impact of measured parameters on global instability onset and disruption prediction is considered.

[1]Supported by the National Undergraduate Fellowship Program in Plasma Physics and Fusion Energy Sciences and the US DOE under DE-FC02-04ER54698.

Carlos Paz-Soldan
General Atomics

Date submitted: 10 Jul 2014 Electronic form version 1.4