

**Abstract Submitted for the 56th Annual Meeting  
Division of Plasma Physics  
October 27–31, 2014  
New Orleans, Louisiana**

Category Number and Subject:

[ ] Theory [ X ] Experiment

**Near Real-Time Gyrotron Data Streaming and Data Acquisition with ns Resolution on the DIII-D ECH System,\*** A.C. Torrezan, D. Ponce, Y.A. Gorelov, M. Cengher, J. Lohr, *General Atomics* – As part of the expansion and upgrade of the electron cyclotron heating (ECH) system on DIII-D, a new data acquisition setup has been implemented to acquire and display waveform data from all gyrotrons in near real time with high time resolution. The data acquisition for each gyrotron system is based on a fast digitizer with 8 channels running at 2 MS/s/channel and a resolution of 14 bits. This enables the operator to monitor all gyrotron-relevant variables as well as fast diagnostic signals such as window arcs. The data are transferred to a local computer through a 132 MB/s PCI bus, and then are streamed to the ECH operator and to a local network attached storage using 1 GB Ethernet links. The data are displayed to the ECH operator by means of a graphical user interface developed in LabVIEW, replacing physical scopes. Acquired gyrotron data are accessible at DIII-D through a local database (PTDATA) connected to the ECH data acquisition system by an Ethernet line, a configuration that eliminates the need for legacy CAMAC hardware in the data link.

\*Work supported by the US DOE under DE-FC02-04ER54698.