

**Abstract Submitted for the Forty-Ninth Annual Meeting
Division of Plasma Physics
November 12–16, 2007, Orlando, Florida**

Category Number and Subject:

Theory Experiment

Power Calibration for the Electron Cyclotron Heating System on DIII-D,* M. Cengher, *ORISE*, J. Lohr, I.A. Gorelov, D. Ponce, *GA*, K. Kajiwara, *JAEA* – The generated rf power for each of the five gyrotrons in the DIII-D system is calculated based on calorimetry, using temperature and flow measurements from the gyrotron and waveguide system cooling circuits for the cavity, window, collector, matching optics unit (MOU) and dummy loads. Analysis of the data involves fitting the dissipated energy versus time curves and integration of the energy for each of the circuits. The cavity signal is used to calculate the total generated energy, using a previously determined relationship between cavity loading and rf production, with other cooling circuits as a check. The time dependence of the rf power is determined using a diode pickoff at the first miter bend in the transmission line normalized to the integrated calorimetry measurement. The MOU calorimetry response provides a direct measurement of the percentage of rf in the Gaussian mode and the efficiency of coupling the rf into the waveguide. The losses in each transmission line are taken into account to calculate the power transmitted to DIII-D.

*Supported by the US DOE under DE-AC05-76OR00033 and DE-FC02-04ER54698.