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Category Number and Subject:

☐ Theory ☒ Experiment

Progress on Measurements of the ECH Power on DIII-D,* M. Cengher, J. Lohr, I.A. Gorelov, D. Ponce, *General Atomics* –Power injected by the electron cyclotron heating (ECH) system in the DIII-D tokamak is measured on a shot to shot basis for the six 110 GHz, 1 MW class gyrotrons of the ECH system. The rf power generated by each gyrotron is determined calorimetrically from cooling circuits of cavity, matching optics unit and dummy loads. Injected power is then determined from measured transmission line efficiencies. The rf pulse length and time dependence are measured using a diode at the first miter bend in the transmission line. For the database, its signal is normalized to the injected power measurement. Two new approaches to power measurement are being tested. The first is an inline power monitor that uses the rf leaked through a small gap in the waveguide to measure the power transmitted. Test results show proportionality to the input power. The second method uses an in-vessel bolometric measurement of the radiated power from a low temperature, low density plasma generated by injected rf with toroidal magnetic field, but no Ohmic or other heating sources. Conditions affecting the accuracy of each method will be discussed.

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