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Category Number and Subject: 5.6.2 DIII-D Tokamak

[ ] Theory [x] Experiment

The Status and Performance of the 110 GHz Gyrotron System on the DIII-D Tokamak,* John Lohr, I.A. Gorelov, D. Ponce, J.J. Peavy, R. Prater, J.F. Tooker, R.W. Callis, *General Atomics,* K. Kajiwara, *ORISE* – The gyrotron system for ECH/ECCD on the DIII-D tokamak is presently comprised of five gyrotrons in the one MW class at 110 GHz. An additional higher power prototype gyrotron is in test. Up to six gyrotrons have been operated simultaneously, injecting slightly over 4 MW. The waveguides are ≈90 m in length with ≈80% transmission efficiency. The launcher systems are fully articulating and are capable of injecting at ±20° toroidally for current drive and at poloidal angles which cover the tokamak upper half plane. Full control of the elliptical polarization of the rf beam is provided. Monitors of the injected rf power provide shot-by-shot measurements and calorimetry data are acquired for the water-cooled components of the gyrotrons and transmission lines. The system provides flexible modulation capability and feedback control of the output power. Two short pulse gyrotrons in the present installation are being replaced with three new 1 MW units capable of 10 s pulses.

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