

Abstract Submitted for the Forty-Seventh Annual  
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Category Number and Subject:

Theory     Experiment

**ECH at DIII-D,\*** J. Lohr, I.A. Gorelov, D. Ponce, J.F. Tooker, R.W. Callis, *General Atomics*, K. Kajiwara, *Oak Ridge Institute for Science Education*, R. Ellis, *Princeton Plasma Physics Laboratory* – The gyrotron installation on the DIII-D tokamak is being upgraded with the acquisition of three 110 GHz, 1.0 MW, 10 s gyrotrons having cryogen-free magnets. In addition to these gyrotrons, which will have diode geometry, a single stage depressed collector prototype gyrotron, also operating at 110 GHz, but capable of generating in excess of 1.0 MW at increased efficiency is being tested to maximum parameters. A number of specialized system components are being developed to accommodate the increased output power of this tube. The ultimate system will generate up to 5.5 MW for experiments, with injected power in excess of 4.0 MW. Fast scanning of the injection angles, improved control of the high voltage power supplies, more flexible fault processing capability, better sweeping of the electron beam over the gyrotron collectors and enhanced control of the output power are being implemented.

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