

Applications of ECH on the DIII-D tokamak and projections for future ECH upgrades

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Abstract

Electron Cyclotron Heating and Current Drive plays an important role in the DIII-D program. In high performance discharges EC power contributes greatly to MHD stability, and this is particularly important for discharges with low rotational torque applied, as will be the case for ITER. Off-axis EC current drive also plays a key role in the actualization of steady-state scenarios by supporting the desired current profile. In order to carry out these applications at higher beta and higher field, an upgrade of the EC power to 15 MW is needed, and the best gyrotron frequency for the DIII-D program is 117.5 GHz.