

Modeling of Discharges With Fast Wave Power in DIII-D*

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In order to facilitate the planning and analysis of experiments in which fast wave power is applied to discharges in DIII-D, a code has been developed to run conveniently a ray tracing code (GENRAY) and/or a full wave code (TORIC) for experimental or planned conditions. The code gathers information about the kinetic profiles (T_e , T_i , n_e , Z_{eff}) and the neutral beam injection and calls the ONETWO transport code to obtain the density and equivalent Maxwellian temperature profiles of the energetic beam ions. Using all these data and the wave frequency and toroidal and poloidal spectra characteristic of any DIII-D antenna, GENRAY or TORIC can be run. For ray tracing some self-consistency checks on the absorption and current drive physics may be made using the output files, and comparisons with analytic expressions have been made. Comparisons with past experiments and with calculations using the CURRAY ray tracing code will be presented. A goal of this program is the development and validation against experiment of computational models for FWCD which will be suitable for use on ITER.

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