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Category Number and Subject:

[ ] Theory [**x**] Experiment

Plasma Rotation and RF Heating in DIII–D,* J.S. deGrassie, D.R. Baker, K.H. Burrell, C.M. Greenfield, Y.R. Lin-Liu, T.C. Luce, C.C. Petty, R. Prater, *General Atomics*, B.W. Rice, *Lawrence Livermore National Laboratory*, M.R. Wade, *Oak Ridge National Laboratory* — In a variety of discharge conditions on DIII–D it is observed that rf electron heating reduces the toroidal rotation speed and core ion temperature. The rf heating can be with either fast wave[1] or electron cyclotron heating,[2] and the effect is insensitive to the details of the launched wavenumber spectrum. To date, all target discharges have rotation established with co-directed neutral beam injection. One possible explanation is that the ion diffusivities for momentum and energy increase with T_e/T_i, in accord with models of turbulence growth rates. Another is that the rf heating induces a radial current which creates a torque, reducing the rotation and hence the electric field. The resultant loss of electric field shear stabilization then enhances the net ion thermal diffusivity. To some extent both of these mechanisms are indicated. Data on these effects will be presented together with an evaluation of the relative merit of competing explanations.

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[1]J.S. deGrassie *et al.*, Proc. 12th Top RF Conf., Savannah (1997) p. 93.

[2]C.M. Greenfield *et al.*, Proc. 17th IAEA Conf., Yokahama (1998) to be published.

[**x**] Prefer Poster Session
[ ] Prefer Oral Session

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