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[ ] Theory [x] Experiment

Improved Momentum and Ion Thermal Confinement with
Stabilization of Neoclassical Tearing Modes in DIII–D,* J.S. deGrassie,
R.J. La Haye, T.C. Luce, C.C. Petty, R. Prater, General Atomics,
D. Brennan, Oak Ridge Institute for Science Education — In DIII–D it
is observed that rf electron heating sometimes results in a reduction in
core toroidal momentum and ion thermal confinement, especially in
discharges having enhanced core confinement and hot ion modes. To
lowest order the heating method does not matter, either electron
cyclotron or fast wave heating had the same effect. The working model
is that increasing the electron temperature destabilizes turbulence
which enhances transport. Here we describe counterexample
discharges in which EC current drive is used to stabilize a 3/2
neoclassical tearing mode. There is an increase in electron temperature
and there is some recovery in toroidal rotation and ion temperature, as
well as a recovery in normalized beta with the mode suppression.
These examples are given by way of contrast to the former results, and
to demonstrate the importance of internal MHD activity on toroidal
momentum confinement. A further question is whether the effects
described in† may be due to such magnetic activity at levels below the
detection threshold of the DIII–D magnetic probes.

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†J.S. deGrassie et al., Proc. 26th European Conf. on Contr. Fusion and Plasma

[x] Prefer Poster Session
[ ] Prefer Oral Session

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