EFFECTS OF HEATING PROFILE ON ENERGY TRANSPORT IN NEUTRAL BEAM HEATED TFTR PLASMAS


Plasma Physics Laboratory, Princeton University
Princeton, New Jersey 08543 U.S.A.

ABSTRACT. Effects of different heating profiles on energy transport were studied on the TFTR tokamak. Centrally peaked and hollow heating profiles were obtained by aiming 2 MW of neutral beam at different major radii of tangency, in the low density unsaturated ohmic confinement regime and in the higher density saturated ohmic confinement regime. Both the ion temperature profile and the density profile were altered substantially by controlling the heating profile, but little change was observed on the electron temperature profile. The lengthening of the sawtooth period correlated with the reduction of toroidal loop voltage inside the \( q = 1 \) surface. The electron thermal diffusivity obtained from the heat pulse propagation time-to-peak analysis was significantly larger than the diffusivity

* Plasma Fusion Center, Massachusetts Institute of Technology, Cambridge, Massachusetts, U.S.A.
† Department of Physics, University of California at San Diego, La Jolla, California, U.S.A.