Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Pedestal Optimization Through Shape Variation in DIII-D[1] A.W. LEONARD, T.H. OSBORNE, P.B. SNYDER, R.J. GROEBNER, P. GOHIL, General Atomics — Pedestal pressure dependence upon the shape parameters triangularity and squareness are measured experimentally in DIII-D and compared to the calculated stability limit. The pedestal pressure is an important parameter in optimizing the performance of a tokamak, affecting global confinement and stability limits as well as ELM heat flux into the divertor. The pedestal pressure limit is found to vary significantly with squareness as well as the previously described triangularity dependence. Control of the pedestal pressure through squareness has the advantage of not affecting the divertor operation, fueling and pumping. High spatial resolution edge measurements from Thomson Scattering and CER determine the pedestal pressure profile just before an ELM. Numerous magnetic equilibria are constructed about this operational point by scaling the edge pressure and current about the measured values. The edge stability operational space in each shape configuration is then mapped out by an ELITE calculation of the ELM instability growth rate in each constructed magnetic equilibrium.

[1]Work supported by U.S. DOE under DE-FC02-04ER54698.

A.W. Leonard

Date submitted: 26 Aug 2005 Electronic form version 1.4