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Effect of Central Pressure Gradient on the Stability of Advanced Tokamak Equilibria[1] M.A. MAKOWSKI, T.A. CASPER, R.J. JAYAKUMAR, LLNL, J.R. FERRON, T.S. TAYLOR, GA — High bootstrap fraction advanced tokamak (AT) equilibria require broad pressure profiles in order to achieve high normalized beta and proper bootstrap alignment. The stability limit with a nearby conducting wall increases with broadening of the pressure profile. In DIII-D, high performance AT discharges obtained with an H-mode pedestal attain second stability. Stability calculations comparing profiles with and without a pedestal indicate that the pedestal is in general, stabilizing, as the pedestal broadens the pressure profile. Preliminary indications are that for broad pressure profiles to remain stable at high values of normalized beta, the pressure gradient near the axis must remain small. Systematic studies of the effect of finite $p'(0)$ will be carried out and discussed.

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