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Enhanced Stability and Confinement in DIII–D Discharges with Weak Magnetic Shear and Recent Experiments in Crescent/Bean Geometry,[1] L.L. LAO, K.H. BURRELL, M.S. CHU, J.R. FERRON, A.W. HYATT, G.L. JACKSON, T.C. LUCE, R.L. MILLER, T.H. OSBORNE, P.A. POLITZER, G.M. STAEBLER, E.J. STRAIT, T.S. TAYLOR, A.D. TURNBULL, General Atomics, E.A. LAZARUS, Oak Ridge National Laboratory, G.A. NAVRATIL, Columbia University, G. REWOLDT, Princeton Plasma Physics Laboratory, B.W. RICE, B.W. STALLARD, Lawrence Livermore National Laboratory — High performance discharges having a broad region of weak or slightly negative magnetic shear are observed in DIII–D. They are characterized by a broad pressure profile, enhanced stability and confinement, and high fusion reactivity. Values of $\beta_N \sim 5$ and H ~ 4 have been obtained Simultaneously. This enhanced stability and confinement arises from a combination of weak magnetic shear and rotational flow shear. The performance of these weak shear discharges exceeds that of discharges having strongly negative magnetic shear. Results from recent experiments in crescent/bean geometry will also be presented.

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L.L. Lao
lao@gav.gat.com
General Atomics

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