Helical-D Pinch

M.J. Schaffer
General Atomics, P.O. Box 85608, San Diego, California 92186-5608

Summary

A stabilized pinch configuration is described, consisting of a D-shaped plasma cross section wrapped tightly around a guiding axis. The “helical–D” geometry produces a very large axial (toroidal) transform of magnetic line direction that reverses the pitch of the magnetic lines without the need of azimuthal (poloidal) plasma current. Thus, there is no need of a “dynamo” process and its associated fluctuations. The resulting configuration has the high magnetic shear and pitch reversal of the reversed field pinch (RFP). (Pitch = \( P = qR \), where \( R \) = major radius.) A helical–D pinch might demonstrate good confinement at \( q \ll 1 \).