Dimensionless parameter scaling of transport in DIII-D

C.C. Petty

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

Contact author: C.C. Petty, General Atomics, P.O. Box 85608, San Diego, California 92186-5608, Phone (858) 455-2831, Fax (858) 455-4156, e-mail: petty@fusion.gat.com

Total pages: 40 (29 text, 10 figures, 1 table)

(Received

Abstract. A comprehensive series of dimensionless parameter scaling experiments have been undertaken in the DIII-D tokamak with the goals of guiding turbulent transport theories and predicting confinement in future devices. These studies have measured the dependences of transport on the relative gyroradius, beta, collisionality, safety factor, cross-section shape, and ratio of ion to electron temperature. The results from these experiments, which are mainly in favor of drift wave turbulent transport, point to a favorable path for increasing the fusion performance in burning plasma devices.

PACs Nos. 52.25.Fi, 52.55.Fa