

GLF23 modeling of turbulent transport in DIII-D

J.E. Kinsey

Lehigh University, Bethlehem, Pennsylvania

Contact author: J.E. Kinsey, c/o General Atomics, P.O. Box 85608, San Diego, California 92186-5608, Phone (858) 455-3336, Fax (858) 455-3586, e-mail: kinsey@fusion.gat.com

Total pages: 43 (33 text, 10 figures, 0 tables)

(Received

Abstract. During the past decade, there has been significant progress made in our predictive understanding of turbulent transport in tokamaks. Theoretical advances have led to the development of comprehensive theoretical transport models based on driftwave physics. This paper summarizes the development of the GLF23 driftwave transport model, its application to modeling of DIII-D experiments, and burning plasma projections. The model predicts the transport due to ion temperature gradient (ITG) trapped electron (TEM), and electron temperature gradient (ETG) modes and includes the effects of $E \times B$ shear flow and Shafranov shift stabilization. GLF23 has been successful in predicting the core profiles in a wide variety of discharges. Examples of published results are given along with a discussion of some outstanding physics issues.