Current-Driven Drift Wave Turbulence and Electron Thermal Transport in Tokamaks\(^1\) C. LEE, P.H. DIAMOND, University of California, San Diego, M. PORKOLAB, PSFC, Massachusetts Institute of Technology — Recent analyses (Y. Lin, M. Porkolab; 2009) have indicated that the “usual suspects” for the mechanism of electron thermal transport, such as ITG, ETG, CTEM modes, etc., cannot explain results from modest density, \(T_e > T_i\) plasmas, in either OH or ECH heating regimes. Interestingly, such plasmas exhibit very large toroidal current drift parameters \(v_d/c_s\), thus naturally suggesting a re-visititation of current driven drift waves. In this paper, we discuss the linear, quasilinear and non-linear theory of current driven drift waves in tokamaks. Parallel electron velocity scattering, a critical effect beyond the capacity of most, gyrokinetic codes is a major focus of investigations. The coupled transport of current density and heat are considered. Work is ongoing and results will be presented.

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