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Verification of TEMPEST with neoclassical transport theory[1] Z. XIONG, B.I. COHEN, R.H. COHEN, M. DORR, J. HITTINGER, G. KERBEL, W.M. NEVINS, T. ROGNLIEN, M. UMANSKY, X. XU, Lawrence Livermore National Laboratory — TEMPEST is an edge gyro-kinetic continuum code developed to study boundary plasma transport over the region extending from the H-mode pedestal across the separatrix to the divertor plates. For benchmark purposes, we present results from the 4D (2r,2v) TEMPEST for both steady-state transport and time-dependent Geodesic Acoustic Modes (GAMs). We focus on an annular region inside the separatrix of a circular cross-section tokamak where analytical and numerical results are available. The parallel flow velocity and radial particle flux are obtained for different collisional regimes and compared with previous neoclassical results. The effect of radial electric field and the transition to steep edge gradients is emphasized. The dynamical response of GAMs is also shown and compared to recent theory.

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