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The Role of Passive Momentum Flux in Turbulence Saturation and Bursty Edge Transport[1] J.R. MYRA, D.A. RUSSELL, D.A. D'IPPOLITO, Lodestar Res. Corp. — In edge transport, particle sources (typically ionization) sustain the density (but not the zonal velocity) profile against turbulence-induced losses. The conservation law for zonal momentum $<nv_y>$ implies a "passive" momentum flux associated with the radial particle flux of the form $<nv_x><v_y>$. When other linear zonal flow damping mechanisms are small, e.g. viscosity and drag, this nonlinear passive loss term competes with Reynolds stress $<n><v_x v_y>$ to establish a dynamical turbulence quasi-steady state, which is typically very bursty in character. We study the turbulent state in this regime, with attention to the saturation mechanisms of profile modification and zonal flow shear. Reduced dimensionality models are presented together with results from the SOLT turbulence code. We find that bursts are associated with the radial convective (i.e. passive) transport of the zero-velocity-shear point across the instability zone. Broader implications for the role of the $v_y(x)$ profile will be discussed.

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