Abstract Submitted
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A two-region model of turbulent transport in the edge and scrape-off layer plasma[1] D.A. RUSSELL, D.A. D'IPPOLITO, J.R. MYRA, Lodestar Research Corporation — 3D BOUT simulations of turbulence in diverted tokamak plasmas [2] recently demonstrated dramatically enhanced transport by blobs in the scrape-off layer (SOL), correlated with sudden electrical disconnection of the outer-midplane (OM) from the divertor sheath, suggesting that reduced modeling of turbulent transport in the OM ought to include nontrivial "parallel physics." We describe a minimal, "2-region" version of the 3D model introduced in [2]: gradient-driven turbulence in the OM is coupled to resistive cross-field transport in the X-point region by a *jump condition* on Ohms law applied at the boundary between the two regions. The enhancement of cross-field conductivity by field-line fanning [3] is modeled by an area-preserving, *stretching-and-squeezing*, coordinate transformation between the two regions. The model's linear, unstable eigenmodes are distinguished by X-point resistivity.[4] Results from numerical simulations of the fully nonlinear model equations in regimes of strong turbulence will be presented.

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