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Modeling of Blob Formation in NSTX Edge Turbulence[1] T. STOLTZFUS-DUECK, J.A. KROMMES, S.J. ZWEBEN, Princeton U. — In tokamak edge turbulence, predominantly electrostatic cross-field nonlinearities are balanced with wavelike parallel coupling that is often electromagnetic. Magnetic field fluctuations affect both the parallel coupling and dissipative properties of the turbulence at perpendicular scales larger than the skin depth. The resulting mathematical structure is discussed as are approaches to, and limitations of, 2D approximations. A specific reduced 2D fluid model appropriate for modeling of "blob" formation in the electromagnetic NSTX edge is derived both semi-heuristically and from a systematic projection method. Initial numerical solutions will be presented, and their frequency and wave-number spectra will be compared with experimental results from the gas-puff imaging diagnostic on NSTX.

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