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Simulations of Decaying Kinetic Alfvén Wave Turbulence: Intermittent and Coherent Structures KURT SMITH, PAUL TERRY, UW-Madison, CMSO — We simulate decaying kinetic Alfvén wave turbulence in a strong guide field, appropriate for modeling interstellar turbulence at scales $\leq 10\rho_s$. Ion flow decouples from the system at these scales, while electron density (n_e) fluctuations equipartition with the magnetic field. Stable circularly symmetric structures form in J, B and n_e fields after a few Alfvén times; nonlinear magnetic shear prevents turbulence from mixing the structures into the background and allow the structures to persist for many Alfvén times. J filaments are large in amplitude and spatially localized, and their associated B and n_e structures are less localized, consistent with the Biot-Savart law and KAW equipartitioning. Ensemble-averaged pdfs indicate n_e and ∇n_e deviate strongly from Gaussian statistics following the onset of structure formation. The non-Gaussian ∇n_e statistics are especially of interest as a possible explanation of $\tau \propto D^4$ scaling of pulsar signal widths τ with distance-to-source D.—Work supported by NSF.

Kurt Smith
UW-Madison, CMSO

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