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Dynamical Origin of Small-Scale Intermittent Density Fluctuations in Interstellar Medium K.W. SMITH, P.W. TERRY, Center for Magnetic Self Organization in Laboratory and Astrophysical Plasmas, University of Wisconsin-Madison — Pulsar radio signal broadening by interstellar turbulence is consistent with non Gaussian density fluctuations at small scales. We examine physical mechanisms responsible for the inferred intermittency from a model for kinetic Alfvén wave (KAW) turbulence. KAW turbulence characterizes density fluctuations at scales smaller than the ion gyroradius. Intermittency at these scales requires a mechanism for supporting localized structures against turbulent mixing in the absence of significant flows or ion forces. We first investigate decaying turbulence by formulating a two-time scale description of slowly evolving localized current filaments in rapidly evolving KAW turbulence. If the magnetic field shear of a filament is sufficiently strong, refraction of random kinetic Alfvén waves localizes them to the edge of the filament and strongly reduces the anomalous diffusion of the filament, allowing the filament to remain coherent. This process also applies to the density perturbation associated with the current filament. A condition for coherency is derived for comparison with simulation data. Work supported by NSF

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