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Two species continuum kinetic simulation of plasma turbulence[1]
D.W. CREWS, I.A.M. DATTA, U. SHUMLAK, Univ of Washington — We numerically investigate a problem of plasma turbulence decay in the solar wind using the continuum kinetic Vlasov-Maxwell system. While a previous investigation [Franci et al. ApJ 812 (2015)] has used an electron fluid model with highly resolved PIC ions, recent results in collisionless problems with kinetically resolved electrons indicate that plasma dynamics result in non-Maxwellian electron distributions. In this approach both ion and electron species are resolved kinetically. Following Franci, a uniform two-dimensional geometry with an out-of-plane magnetic field is considered, where an equipartitioned spectrum of magnetic and kinetic energy fluctuations is initialized on a scale well above an ion scale length $r_i = v_A/\Omega_i$. Evolution of the kinetic and magnetic energies to other scales is then observed. A newly implemented kinetic modeling capability in University of Washingtons WARPXM code is used, via a RKDG finite element method with an unstructured physical space and a cartesian velocity space.

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