

## Simulations of forced and decaying sub-ion scale turbulence with iPIC3D

Solar wind is highly turbulent with energy spreading and cascading over a wide range of scales from the size of the solar system down to electron scales. Recent observations have shown a cascade of energy below the ion-scales extending to the electron scales. We perform iPIC3D simulations of decaying turbulence which show relative abundance of kinetic Alfvén waves (KAWs) at sub-ion scales over whistler waves. Forcing is implemented in iPIC3D which mimics driving by Alfvén waves. These simulations also show a similar dominance of KAWs. We find strong intermittency at these kinetic scales manifested in the form of thin current sheets. We use clustering techniques to identify these current sheets in our simulations and measure their thickness. They mostly seem to have electron skin depth size thickness. The scale dependence of current sheet properties –peak current density, relative magnetic field change, and rotation angle –are measured from these simulations. They show remarkable similarities with observations from Magnetospheric Multiscale Mission and Parker Solar Probe.

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