Kinetic models of current sheets in the solar wind

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Current sheets in the collisionless solar wind usually have kinetic spatial scales. In-situ measurements (e.g. by Artemis) show that these current sheets are often approximately force-free, i.e. the directions of their current density and magnetic field are aligned, despite the fact that the plasma $\beta$ is found to be of the order of one. The measurements also often show systematic asymmetric spatial variations of the plasma density and temperature across the current sheets, whilst the plasma pressure is approximately uniform. We present analytical equilibrium distribution functions of self-consistent force-free collisionless current sheets which allow for asymmetric plasma density and temperature gradients.