

Abstract Submitted
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Onsager Regression applied to fluctuations of the ion distribution function.¹ FRED SKIFF, University of Iowa — We compare the two-point correlation function of the ion distribution function, resolved in space and in particle velocity along a fixed magnetic field to the linear response function of a cylindrical plasma column at low frequency. Even though the plasma is has unstable fluctuations (convectively limited) the fluctuations nevertheless carry information on the linear response. The experimentally observed particle-velocity averaged fluctuation is symmetric in delay time even for spatially separated points and agrees with dissipative driftwave theory. There is a kinetic component, with a very low degree of symmetry, which appears to be driven by nonlinear interaction of the driftwaves even at low amplitude. We explore what can be learned from these time correlation functions about the kinetic component. The experiments are performed on a CW, singly-ionized argon plasma column immersed in a 0.1T magnetic field. The fluctuation data are collected using laser induced fluorescence and movable light collection periscopes. Progress on a second laser system to extend the measurements to two different ion velocities as well as separate positions and times will be presented.

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