

Abstract Submitted
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Generation of a Sheared Plasma Rotation by Emission, Propagation and Absorption of Drift Wave Packets MIN XU, GEORGE TYNAN, PATRICK DIAMOND, STEFAN MULLER, CHRISTOPHER HOLLAND, JONATHAN YU, University of California, San Diego, ZHENG YAN, University of Wisconsin-Madison — Collisional electron drift wave turbulence is shown to nonlinearly generate drift wave packet structures with density and vorticity fluctuations in the central plasma pressure gradient region of a linear plasma device. Tracking these packets reveals that they follow an outward directed spiral shaped trajectory in the (r, θ) plane, are azimuthally stretched and develop anisotropy as they approach an axisymmetric, radially sheared azimuthal flow located at the plasma boundary. Nonlinear energy transfer measurements and time-delay analysis confirm that structure absorption amplifies the sheared flow. Similar mechanisms likely operate at the edge of confined toroidal plasmas and should lead to the amplification of sheared flows at the boundary of these devices as well.

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