Abstract Submitted
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Convective transport of fast particles in dissipative plasmas near an instability threshold[1] BORIS BREIZMAN, Institute for Fusion Studies, The University of Texas at Austin, Austin, Texas 78712, USA, MATTHEW LILLEY, Physics Department, Imperial College, Prince Consort Road, London SW7 2BW, UK — We demonstrate that a marginally unstable energetic particle population in a dissipative plasma can change globally due to the act of a single wave-particle resonance. The resonance serves as a seed for the continuous production of nonlinear holes and clumps, whose convective motion in phase space results in substantial flattening of the fast particle distribution function. A bump-on-tail instability is considered as an example in a single-mode limit as well as in the quasilinear regime. The convective hole-clump transport mechanism tends to be more efficient near the instability threshold than quasilinear diffusion.

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