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Investigation of nonlinear kinetic effects induced by weak turbulencein Vlasov-Maxwell simulations of Backward Stimulated Raman Scattering A. GHIZZO, LPMIA UMR 7040 UHP Nancy France, M. ALBRECHT-MARC, LPMIA, T. W. JOHNSTON, INRS Energie et Materiaux Quebec, T. REVEILLE, LPMIA, P. BERTRAND, LPMIA, B. AFEYAN, Polymath Research Inc, Pleasanton CA — We report here our recent results from semi-lagrangian Vlasov-Maxwell simulations which have been performed for homogeneous or inhomogeneous (parabolic) profiles over a long time. A major role is played by the conventional Backward Stimulated Raman Scattering (B-SRS) for only a short time, after what trapping effects induce a new kinetic regime dominated by self-organized and self-sustained phase space holes induced by EPW vortex merging and similar to Bernstein-Greene-Kruskal (BGK) equilibria. Optical mixing was considered in simulations that means the start of the instability (B-SRS) was controlled by the injection of a low-amplitude electromagnetic probe allowing by the noiseless character of the Vlasov code. A new parametric interaction mechanism was observed involving the scattering off of the probe light by BGK-like structures. These results shows also that the fluid-like behavior at early times of simulation becomes afterwards fully kinetic, invalidating a fluid approach based on a usual three-wave model in this regime.

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