Effects of nonlinear left-hand circularly polarized waves supported by a proton beam on linear beam-plasma instabilities

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This paper studies the effect of nonlinear left-hand polarized waves supported by a proton beam on the linear circularly polarized instabilities driven by the same beam. It shows that the nonlinear wave can either stabilize or destabilize the linear instabilities. The effects depend on the amplitude of the nonlinear wave and on the temperature of the system. It also shows that purely electrostatic ion-acoustic-like waves, can be destabilized by the large amplitude wave. The latter instabilities do not occur in the absence of the nonlinear waves.