Magnetized electron-positron plasmas

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ABSTRACT: Electrostatic oscillations in cold electron-positron plasmas can be coupled to a propagating electromagnetic mode if the background magnetic field is inhomogeneous. Previous work considered this coupling in the linear regime, successfully simulating the electromagnetic mode. Here we present a stability analysis of the non-linear problem, perturbed from dynamical equilibrium, in order to gain some insight into the modes present in the system. Preliminary results from the non-linear numerical simulations are also presented.