Parametric decay of a circularly polarized electromagnetic wave in an electron-positron magnetized plasma

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We study the parametric decays of an electromagnetic wave propagating along an external magnetic field in an electron-positron plasma. We include weakly relativistic effects on the particle motions in the wave field, and the nonlinear ponderomotive force. We find resonant and nonresonant wave couplings. These include, ordinary decay instabilities, in which the pump wave decays into an electro-acoustic mode and a sideband wave. There are also nonresonant couplings involving two sideband waves, and a nonresonant modulational instability in which the pump wave decays into two sideband modes. Depending on the parameters involved, there is a resonant modulational instability involving a forward propagating electro-acoustic mode and a sideband daughter wave.