GRADIENT DRIFT ION-CYCLOTRON INSTABILITIES IN THE SOLAR CORONA

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Recent observations revealed that the solar atmosphere is highly structured in density, temperature and magnetic field. The presence of these gradient in the plasma leads to the appearance of currents which in the weakly collisional corona constitute a free energy for driving microinstabilities. These instabilities are very important since they constitute an important source of ion-cyclotron waves which have been observed to play an important role in coronal heating but whose coronal origin remains unclear. Considering a density stratification transverse to the magnetic field, we aim to study the possible occurrence of these gradient-induced microinstabilities under typical coronal funnel conditions. Assuming the WKB approximation, we perform a Fourier plane waves analysis using the collisionless multi-fluid model. While neglecting the electron inertia this model allows to take into account ion-cyclotron wave effects that are absent from the one-fluid MHD model.