

ION TYPE POLARIZATION OF ELECTRON WHISTLER WAVEFIELD

Lundin B.V., IZMIRAN, Russia

Krafft C., University Paris-11, France

It was pointed out that in some cases the registered wave field cannot be fitted by a set of uncorrelated plane waves but probably corresponds to their interference pattern. This can reduce the accuracy of determination of wave packets arrival angles and can lead to the misunderstanding of the physical nature of the registered wave phenomena.

We have shown that left-hand polarization (i.e. ion type polarization) can appear in the interference pattern of two plane electron whistler waves ; this cannot occur in the limit of completely uncorrelated plane waves. Moreover, it is shown that the possibility exists to record simultaneously the opposite sense of polarisation in magnetic and electric wavefield components, mainly for the quasielectrostatic wavefield near the resonance cone when an essential electric field components along wavevectors of plane waves appear.

The registration of ion type polarized waves with frequencies between the local lower hybrid frequency and the electron gyrofrequency in a cold overdense plasma is sufficient to indicate an interference wave pattern, which can typically occur near the artificial or natural reflecting magnetospheric plasma regions, inside the waveguides or, in principle, in some self-sustained nonlinear wave field structures.