



Properties of the ion distribution function with velocity space holes

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Study of particle dynamics in the Earth's magnetotail has shown that nonadiabatical ion acceleration in the neutral sheet may lead to the formation of the non-maxwellian ion distribution functions. The unique feature of such distribution is the space hole centered on 90° pitch angle so the distribution is not symmetrical about magnetic field direction. Ion distributions with an empty region in velocity space represent a source of free energy for excitation as plasma waves as electromagnetic waves.

It was shown that such distributions are really unstable to the electromagnetic waves generation and the investigation of stability properties of such ion distribution in the relation to electromagnetic waves was done.