



Drift compressional modes in the magnetosphere

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The drift compressional mode (DCM) is a mode of oscillation of the collisionless inhomogeneous plasma with finite pressure. It is supposed that a kind of the azimuthally-smale-scale ULF waves in the magnetosphere, the compressional storm time Pc5 waves, can be identified with the DCM. The DCM's frequency depends on the azimuthal wave number m and typically has the same order of magnitude as the diamagnetic drift frequency. In the dipole-like magnetosphere DCM is concentrated near the geomagnetic equator. The DCM is generated by the plasma instability in presence of the large plasma pressure gradients and inverted distribution function. The DCM is coupled with the Alfvén mode due to the plasma and magnetic field inhomogeneity. If the azimuthal wave number exceeds some critical value m^* , these oscillations branches are merged and form unstable mixed ULF mode. The DCM's signatures are observed at the night-side Pc5 waves registered with the Ekaterinburg coherent decameter radar: their frequencies are lower than Alfvénic eigenfrequencies on the same L-shells and depend on the azimuthal wave number m . (The study was carried out as part of the Program of the fundamental research of the state academies of Russia for 2013-2020 years (project II.16.1.3), and supported by RFBR grant 16-05-00254-a.)