



## **Multilayer structures in the ionosphere F2 layer as a result of the presence of a shear excited vortical perturbation**

**L. N. Lomidze** (1,2), G. G. Didebulidze (1)

(1) Georgian National Astrophysical Observatory (former Abastumani Astrophysical Observatory), (2) Tbilisi state University, Georgia (lomidze@genao.org / Fax: +995 32 376303 / Phone: +995 32 376303)

An effect of a shear excited atmospheric vortical perturbation (shear waves) on the mid- latitude night-time ionosphere F2 region electron density height distribution is studied. The ambipolar diffusion equation for the height distribution of the ionosphere F2 region electron density taking into account an inhomogeneous meridional wind and atmospheric waves is solved. It is found that the ionosphere F2 region electron density height distribution under the influence of shear excited vortical perturbations is characterised by multilayer structures. The peak heights and the corresponding values of the multilayer F2 region electron density depend on the values of the meridional wind zonal shear and the shear wave vertical wavenumber. The appearance of the secondary maximum in the ionosphere F2 region and its oscillation close to the Brunt-Vaisala frequency is considered as a possible result of shear waves coupling with short-period atmospheric gravity waves.