

Generation of the planetary ionospheric electric field

(1) G. D. Aburjania (1), L.S. **Alperovich** (2), A. G. Khantadze (1), O. A. Kharshiladze

(1) I.Vekua Institute of Applied Mathematics, Tbilisi State University, Georgia aburj@mymail.ge (2) Department of Geophysics & Planetary Sciences, Tel Aviv University, Israel leonid@luna.tau.ac.il / Fax: +972-3-640-9282

The paper suggests a physical mechanism of large-scale internal vortex electric field generation in the ionospheric E-and F-layers. It shows that the planetary-scale, synoptic short-period (from several second to several hours) and fast processes (with propagation velocity higher than 1 km/s) produce a planetary scale internal vertical electric field. Its value may far exceed that of the dynamo-field generated in the same ionospheric layer by local wind motion. We found, that an ionospheric source of the vertical electric field is spatial inhomogeneity of the geomagnetic field.