## Midday anomaly in penetration of relativistic solar cosmic rays in the magnetosphere

E.V. Vashenyuk [1], B.B. Gvozdevsky[1], I.G. Usoskin[2], K. Mursula[3], and G.A. Kovaltsov[4]

[1] *Polar Geophysical Institute, 14 Fersman Str., Apatity, Murmansk Region 184209, Russia*
[2] *Sodankylä Geophys. Observatory, Oulu unit, University of Oulu, Oulu, Finland*
[3]*Department of Physical Sciences, University of Oulu, Oulu, Finland*
[4] *Ioffe Physical-Technical Institute, St. Petersburg, Russia*

Count rates of two closely located neutron monitors (NMs) at Oulu and Apatity sometimes depicted an unusually different behavior during an anisotropic onset phase of a number of ground level enhancements (GLEs) caused by relativistic solar cosmic rays. In a number of these cases the station pair was located in the midday local time sector when their calculated asymptotic cones were "looking" under the large angle to the IMF direction and in any way could not accept an anisotropic solar proton flux. Nevertheless one of the station pair showed an excess in count rate which can be considered as penetration of the anisotropic fraction of solar proton flux inside a very narrow area through the postnoon magnetopause. This magnetospheric domain and, in particular, the so-called 14 MLT region (14-16 hours of Magnetic Local Time) is known as location of intense field aligned currents, dayside auroras etc. So one can suggest that there may exist some anomaly in the magnetosphere structure facilitating the direct penetration of solar protons through the dayside magnetopause. Together with the Apatity and Oulu NM data our analysis comprised also the data of the worldwide NM network as well as computation of their asymptotic cones These were done by means of trajectory calculations in the up-to date magnetosphere models of Tsyganenko 1989 and 2001. The noted here effects specifies necessity of additional study of magnetosphere structure in the afternoon sector that may be a subject to occurring here intensive geophysical processes.