



Using Pc1 micropulsations excited during a sudden magnetosphere compression in the diagnostics of the magnetosphere

V. Safargaleev (1), A. Kozlovsky (2)

(1) Polar Geophysical Institute, Apatity, 184200, Russia (safargaleev@pgi.kolasc.net.ru),

(2) Sodankylä Geophysical Observatory, FIN-99600, Finland

There is a class of geomagnetic pulsations in the Pc1 frequency range that are observed on the ground during the compression of the magnetosphere by a sudden change of solar wind dynamic pressure (SI). Since one can identify the cause of their appearance, these pulsations seem to be a more suitable instrument for investigation of the near Earth plasma than, for instance, rather frequently observed Pc1s of the “pearls” type. This paper demonstrates in a few examples the use of the SI-excited micropulsations in some tasks of space physics. (1) We have shown that the excitation of pulsations indicates the presence of hot protons in the dayside magnetosphere in the vicinity of the magnetic flux tube of the ground observatory. (2) We have suggested a method for estimation of the period of the local field-line resonant oscillations based on the one-point measurements of the SI-associated Pc1s and riometric absorption. (3) A sharp enhancement of the SI-excited Pc1s has allowed us to perform a more accurate estimation of the propagation velocity of the pulsations in the ionosphere than the one inferred earlier from the “pearls” measurements. The data from observatories in Russia, Finland and Spitsbergen were used in this study.