3<sup>rd</sup> VERSIM Workshop 2008 Tihany, Hungary 15<sup>th</sup> – 20<sup>th</sup> September 2008

## FLR theory and monitoring of the magnetosphere and the Earth's crust

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The investigation of the pulsation spatial structure was based on the solution of direct problems of MHD-wave propagation. Here we show how the developed concepts can be adapted to the inverse problems, to determine the magnetospheric cold plasma distribution and to study the Earth's crust conductivity by using either ground or satellite ULF-observations.

We consider a method of ground-based magnetospheric plasma monitoring based on the FLR-theory. In this method the distribution of Alfven velocity and, thus, plasma density, along a field line is obtained from the FLR-frequencies. To this end, the inverse problem is reduced to a spectral problem. The FLR-frequencies are found from the geomagnetic pulsations.

The Earth's crust conductivity is determined by methods known as magnetotelluric sounding (MTS). The method is based on simultaneous measuring of electric and magnetic fields in the ULF-range. We consider the role of resonance magnetic shells in interpreting data of ground-based MTS as well as the possibility of an above ionosphere MTS from low-orbit satellites.