A METHOD FOR ESTIMATING THE IONOSPHERIC CONDUCTIVITY BASED ON SPACECRAFT OBSERVATIONS OF ALFVÉN WAVES IN THE MAGNETOSPHERE

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In 27 October 2012, the Pc4 range ULF-wave was registered with Van Allen Probe A. The wave was not typical for standing Alfvén waves. The parallel Poynting flux of the wave was directed toward the Northern ionosphere. We suggested that it can be caused by the asymmetry of ionosphere Pedersen conductivity between the Northern and Southern hemispheres. To prove this, we used the analytical model with straight magnetic field lines. Due to the model, we can reconstruct the Alfvén wave parallel structure under various conditions of the ionospheric conductivity. We developed the method to estimate the height-integrated Pedersen conductivity which requires only spacecraft data of ULF wave observations. Approbation of this method was made for the 27 October 2012 event. The calculated Pedersen conductivity of Northern ionosphere is in a good agreement compared to the IRI-2016 model.

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