



Transverse Alfvénic resonator for Pc4 waves detected by Van Allen Probes at the plasmopause

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The Van Allen Probes spacecraft B detected a Pc4 ultralow frequency wave on 23 October 2012. The wave was detected at the outer edge of the plasmopause. The wave had a strong periodical amplitude modulation, so it is showed that the wave was a superposition of oscillations with close frequencies. There were at least two harmonics with frequencies of 15.3 and 13.6 mHz during the event. These harmonics were identified as eigenmodes of transverse Alfvénic resonator at the plasmopause. Energetic 80-keV protons also were strongly modulated with the same frequencies due to the drift resonance. At the same time the inverted (bump on tail) proton distribution instability was observed, that can be the most probable source of the observed wave. The azimuthal wave number was evaluated. Its value is about -100; so the observed Pc4 wave is a westward propagating wave. The work was supported by the Russian Science Foundation under grant 18-17-00021.