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A simulation study of mode conversion process from Upper-Hybrid waves to LO-mode waves in plasmasphere

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In order to clarify the role of the mode conversion process in the generation mechanism of LO-mode waves in the plasmasphere such as kilometric continuum, we have investigated the mode conversion process among UHR-mode, Z-mode and LO-mode waves by a numerical simulation solving Maxwell's equations and the motion equation of a cold electron fluid. The characteristics of the wave coupling process occurring in the cold magnetized plasma are examined in detail. In order to improve the model to actual one, we used the plasma wave data obtained by the Akebono satellite in the plasmasphere. Density gradient was estimated based on resonance frequency of UHR_ waves, the indicate wave normal angle was estimated by comparing observed Ex/Ey with Ex/Ey derived from dispersion relation. Numerical simulation of mode conversion was, then, performed based on estimated density gradient and incident wave normal angle. The results are similar with observation. Simulation results show the radio window, beaming angle of generated LO mode waves, is less than the prediction of previous theory, which agree to observations of kilometric continuum.