

STATIONARY SELF-FOCUSING OF WHISTLER WAVES IN THE IONOSPHERE

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Possibility of the formation of two-dimensional coherent structures - whistler waveguides - during the active ionospheric experiments is investigated both analytically and numerically. It was shown that the lowest threshold for formation of such waveguides corresponds to wave frequency in the vicinity of the half electron cyclotron frequency. Thermal self-interaction (plasma displacement from the high pressure region and wave beam trapping into the formed channel) plays essential role for formation of the waveguides. To describe appearance and evolution of the stationary channels, the generalization of 2D nonlinear Schrödinger equation was proposed. Stability of two-dimensional structures was proved analytically and numerically.