Abstract Submitted for the DPP16 Meeting of The American Physical Society

Non-modal theory of the ion cyclotron turbulence of the inhomogeneous plasma with a shearing transverse current .¹ VOLODYMYR S. MYKHAYLENKO, VOLODYMYR V. MYKHAYLENKO, HAE JUNE LEE, Pusan National University, Busan 609735, South Korea — The non-modal theory of the ion cyclotron turbulence of the inhomogeneous plasma with a shearing transverse current is developed employing the methodology of the shearing modes. The governing equation is the nonlinear integral equation, which determines the temporal evolution of the perturbed electrostatic potential. It accounts for the nonlinear effect of the scattering of ions by the ensemble of ion cyclotron shearing modes. The solutions for this equation are derived for any time interval for the different values of the current velocity, of the velocity shear and wave numbers. The analysis of the temporal evolution of the anomalous ion heating is given. The applications of the developed theory to the space and laboratory plasma are discussed

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