

EMISSION OF ALFVÉN WAVES BY TURBULENT CONVECTION. FIRST STAGE OF CORONAL HEATING THEORY

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Generation of Alfvén waves is considered in the framework of Langevin-Burgers approach applied to model the photospheric turbulent convection. Under this approach there is calculated the heating rate due to Alfvén waves dissipation. There is presented an explicit formula for the energy flux of the Alfvén waves along the magnetic field. The Alfvén waves are considered as intermediary between the turbulent energy and the heat. The derived results are related to a wave channel of heating of the solar corona. If we incorporate amplification of Alfvén waves by shear flow the suggested model of heating can be applied to analysis of the missing viscosity of accretion discs and to reveal why the quasars are the most powerful sources of light in the universe. It is supposed that the Langevin-Burgers approach to turbulence we have applied in the current work can be also helpful for other systems where we have intensive interaction between a stochastic turbulent system and waves and can be used in many multidisciplinary researches in hydrodynamics and MHD.