SATURATION MECHANISMS IN DYNAMO IN THE LAYER

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It is known that after some kinematic regime, magnetic field modifies the flow in such a way that exponential growth of the magnetic field stops and quasi-stationary state takes place. However, the details of this transition are still a subject of intensive study. There are various scenarios how it could happen. Some of them, having origin in the mean-field dynamo theory, consider balance of magnetic and kinetic helicities, so as a result the total helicity is reduced and growth of the magnetic field stops. This scenario is very interesting for rotating systems, where the mean kinetic helicity generates. However it can not be applied to the non-rotating systems. The other scenario is dealing with separation in scales of the magnetic helicity that is conserved in the inviscid limit. In the present contribution we consider, using pseudospectral code in the layer, what happens in the dynamo system with heating below with different physical quantities in the physical and wave spaces during transition from the kinematic to saturated regimes. We also study the role of rotation in this process.

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