KOLMOGOROV FLOW AND ITS NUMERICAL SIMULATION IN A FLAT CHANNEL

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Based on numerical experiments we investigate 2D flow of a weakly conductive inviscid compressible medium under the influence of the periodic external force. Direct numerical simulation using Euler equations allows to simulate periodic vortex structures in the flow, which are similar to the mode of "parquet" in the Kolmogorov's flow The result of this work is a direct numerical simulation of the formation of the vortex flow regime of the "vortex parquet" type in a layer of weakly compressible normal medium based on the Euler equations. It is shown that the formation of this flow is significantly influenced by the initial conditions. Namely, a small perturbation of the velocity components leads to the appearance of a "vortex parquet". During the numerical experiment, the instability of the formed flow and the transition to chaos were found. The results of this study once again emphasize the fact that the development of the turbulent process can occur in the absence of the influence of viscosity and walls.