EFFECT OF THE COMPUTATIONAL GRID ON THE RESULTS OF DIRECT NUMERICAL SIMULATION OF TURBULENT MIXING FOR THE RAYLEIGH-TAYLOR INSTABILITY

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The effect of the type and size of grid cells on the results of direct numerical simulation of turbulent mixing without applying any turbulence models is investigated. The study was carried out for the classical problem of turbulent mixing resulting from the Rayleigh-Taylor instability under constant acceleration of the interface between two incompressible gases of different densities. The simulation was carried in the EGAK code solving 2D and 3D Euler equations for a nonviscous gas.

It is shown that in order to obtain adequate calculation results, it is preferable to use a square (cubic) grid. Deviations from such a grid may lead to incorrect results.