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3.2. Numerical modelling of stochastic components of turbulence (turbulent background); 3.3. Statistical modelling of flows of free turbulence in a long-range wake; 3.4. Formation of large-scale structures in a gap between rotating cylinders (Rayleigh-Zel'dovich problem); 3.5. Numerical simulation of the problems of development of hydrodynamic instabilities and turbulent mixing; 3.6. Numerical modelling of the processes of propagation of an impurity in the atmosphere from a large-scale source; 4. Astrophysical turbulence, convection and instabilities; 4.1. Turbulence  
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4.3. Effect of viscosity on the morphology of the flow of matter in semi-divided binary systems. Results of three-dimensional numerical modelling; 4.4. Large-scale structure of turbulence in accretion discs; 4.5. Convective instability in astrophysics; Conclusions; References; Index

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**Sommario/riassunto**

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The authors present the results of numerical experiments carried out to examine the problem of development of turbulence and convection. On the basis of the results, they propose a physical model of the development of turbulence. Numerical algorithms and difference schema for carrying out numerical experiments in hydrodynamics, are proposed. Original algorithms, suitable for calculation of the development of the processes of turbulence and convection in different conditions, even on astrophysical objects, are presented. The results of numerical modelling of several important phenomena having b

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