

Bifurcations and properties of stochastic regimes of double-diffusive convection.

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Transition to turbulence and its development is under consideration for double-diffusive convection in plain layer. For calculations we are using Bubnov-Galerkin method. During the computation the relative residual was calculated, so proximity to the genuine solution could be estimated. For moderate supercriticalities 20 space harmonics are sufficient for relative residual to be less than 0.001. Sequence of bifurcations leading to the formation of the attracting manifold, which has a structure of Mebius band, and its reverse bifurcation cascade is investigated. Existence of periodic solutions after the reverse cascade of bifurcations is shown. Qualitative changes in the structure of Poincare mapping with the growth of supercriticality after the transition of the system through periodic solutions are explored. Application of coherent structures and modified chain of momentum equations is discussed.

Literature:

Sibgatullin I.N., Gertsenstein S.Ia., Sibgatullin N.R. Some properties of tow-dimentional stochastic regimes of double-diffusive convection in plane layer.// Chaos, Vol. 13, Issue 4, p.1231-1241.