

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Dynamic behavior of low-dimensional model for double diffusive natural convection YOHSUKE YAMADA, RIYOTA TAKEUCHI, HIROSHI GOTODA, Ritsumeikan University — From the viewpoint of a nonlinear dynamical system, an understanding of the physics in the double diffusive natural convection is crucial in present-day engineering and natural science. We discuss the dynamic behavior of the intermittent chaos region in the double diffusive natural convection produced by a fifth-order nonlinear dynamical system. After the intermittent chaos region become complex with increasing normalized Rayleigh number, it undergoes a significant transition to steady-state through reverse period-doubling bifurcation cascade. The dynamic properties of the phase space are investigated in detail in this presentation, which have not been reported in previous theoretical research on dynamical systems.

Yohsuke Yamada
Ritsumeikan University

Date submitted: 03 Aug 2012

Electronic form version 1.4