Separation Process of Two-Phase Fluids

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(a) Time step=1

(b) Time step=200

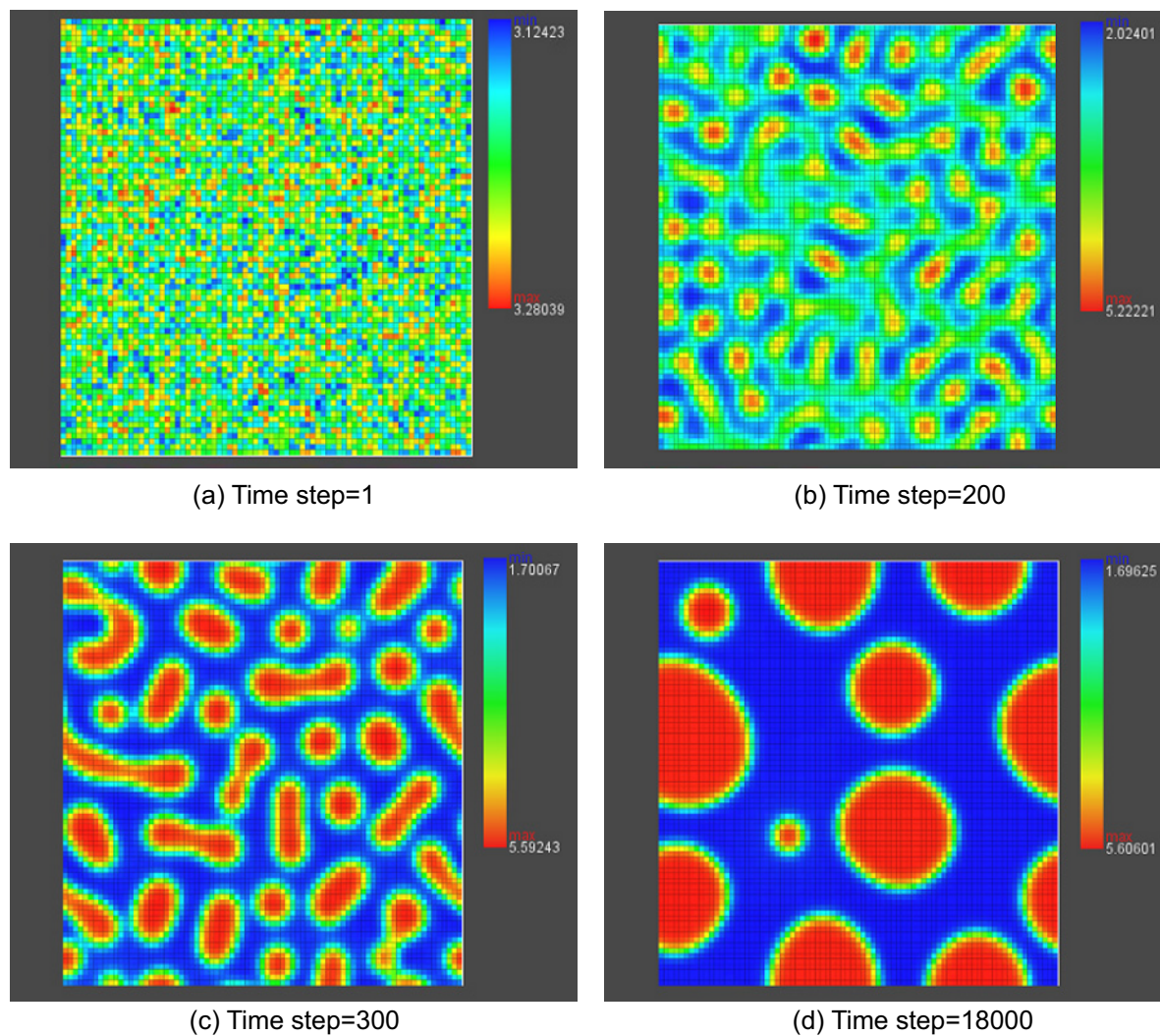(c) Time step=300

(d) Time step=18000

Fig. 1. Phase separation of fluids.

Analytical results of various natural phenomena have been briskly performed recently. We should visualize some numerical results of simulation in order to grasp the phenomenon intuitively. We show a process of two-phase separation of fluids. The density distributions of fluids with two-phase components are shown in Fig. 1. It shows that the fluid mixed uniformly at the initial state is separating into two-phase fluids by the surface tension. The blue fluid's density is 2.34 and the red one is 5.0 at dimensionless unit. The initial density is 3.23 and added 5% fluctuation. We simulated this process by LBM (Lattice Boltzmann Method). LBM can capture the interface of fluid well, because the fluid is considered here as a gathering of imaginary particles. Using LBM, the formation and topological changes of interfaces are spontaneous, which means no particular numerical procedure is needed for tracking or capturing the interface