Seismic stimulation is known as one of the methods of EOR. Numerous observations show that seismic stimulation of oil reservoir may alter water and oil production. To use seismic EOR efficiently, we need to understand the mechanism of the flux change in viscous laminar flow under oscillating boundary condition to simulate seismic EOR. We attempt to understand the mechanism of the flux change in large scale model is larger than that in small one.

The flux change in large scale model is larger than that in small one.

\[ f(x, t + 1) = f(x, t) + \frac{\partial F(x, t)}{\partial t} \]

\( f(x, t + 1) = f(x, t) + \frac{\partial F(x, t)}{\partial t} \)

where, \( f \) is the right side is collision term. \( F \) is the equilibrium distribution function.\( \rho_i \) is the relaxation coefficient which controls the rate of approach to equilibrium by

\[ \rho_i = \frac{1}{\tau_i} \]

In this study, we use Lattice Boltzmann method (LBM), BGK model(I). LBM is a well-known computational simulation method in fluid dynamics and is preferred to analyze both microscopic and macroscopic flow phenomena. We can find following four results:

1. The flux change in sudden expansion and rapid shrinkage model is larger than that in other models.
2. The flux change under streamwise wall oscillation is larger than that under spanwise one.
3. The flux change in large scale model is larger than that in small one.
4. Confirm amplitude characteristics and frequency characteristics.

**Method and Model**

In this study, we use Lattice Boltzmann method (LBM), BGK model(I). LBM is a well-known computational simulation method in fluid dynamics and is preferred to analyze both microscopic and macroscopic flow phenomena. We can find following four results:

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**Discussion**

We assume following three reasoning(Fig.2).

1. High viscous resistance because of velocity difference between wall and flow central(Fig.1,2).
2. Parallel high pressure gradient because of concentration of fluid near wall(Fig3,4).
3. Improving pressure loss at sudden expansion and rapid shrinkage zone (Fig.5,6).

**References**


**Fig.1** The velocity difference between wall and flow central (Parallel panel model).

**Fig.2** The velocity difference between wall and flow central (Parallel panel model).

**Fig.3** Example of concentration of fluid near wall.

**Fig.4** Example of concentration of fluid near wall.

**Fig.5** Example of concentration of fluid near wall.

**Fig.6** Example of concentration of fluid near wall.

**Fig.7** Example of concentration of fluid near wall.

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