RESULTS OF EXPERIMENTS

Track – 3 channel, 50 lattice sites

Figure x.y – x represent section number, y represent experiment number.

1. Input from Left

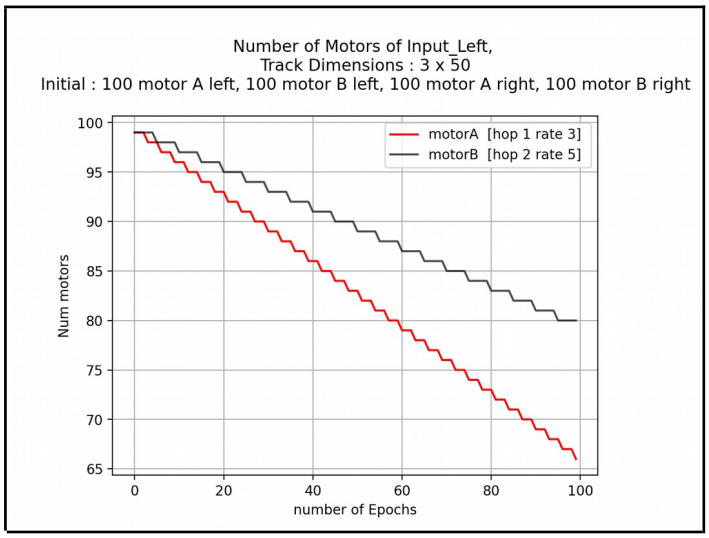

Figure 1.1

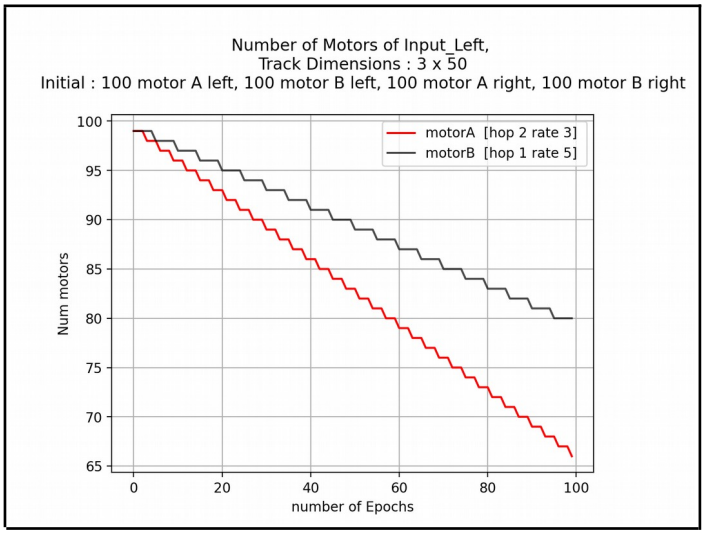

Figure 1.2

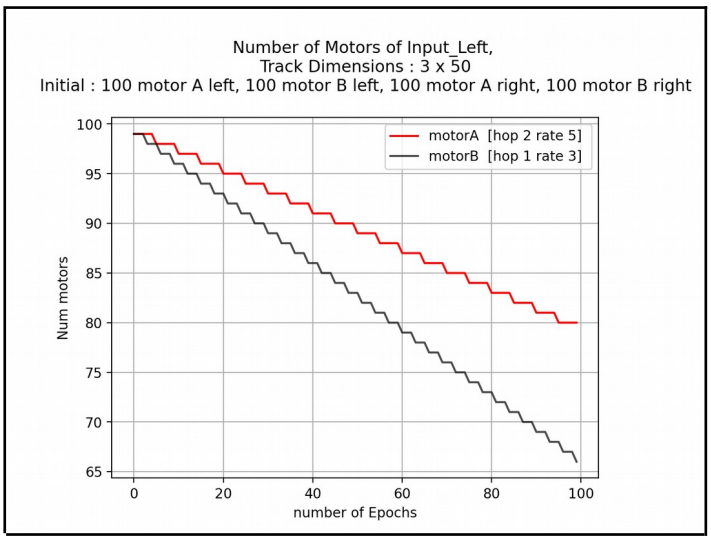

Figure 1.3

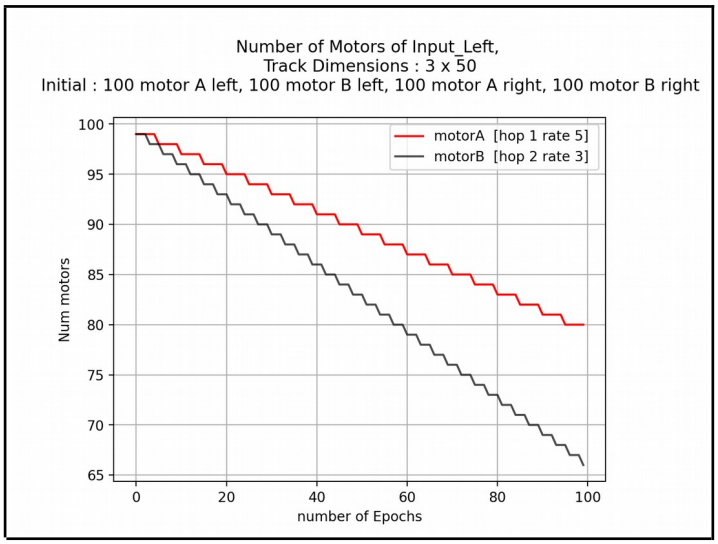

Figure 1.4

The motors of Input_Left travel from left to right. The stepwise appearance is due to releasing of motors at discrete intervals. In all cases the faster motor(motor with less rate) empties out earlier.

2. Input From Right

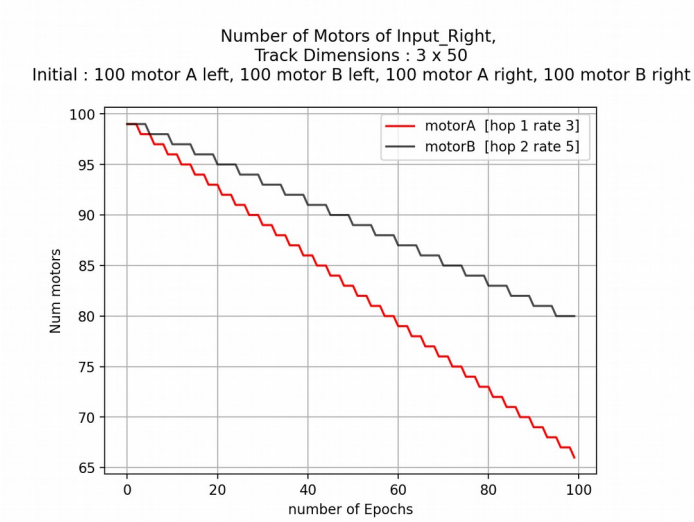

Figure 2.1

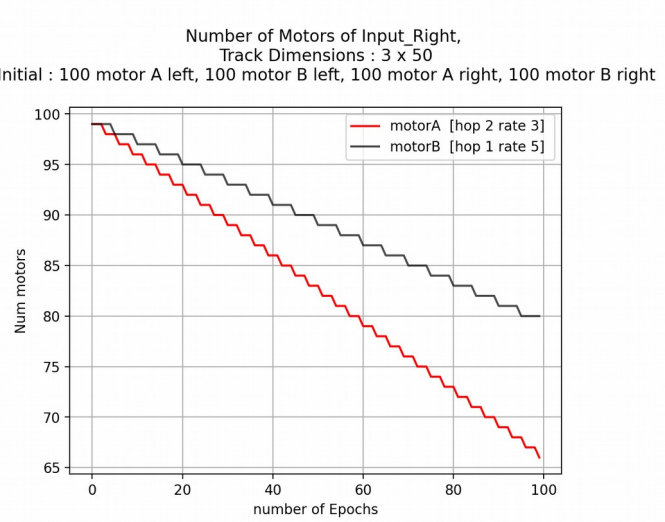

Figure 2.2

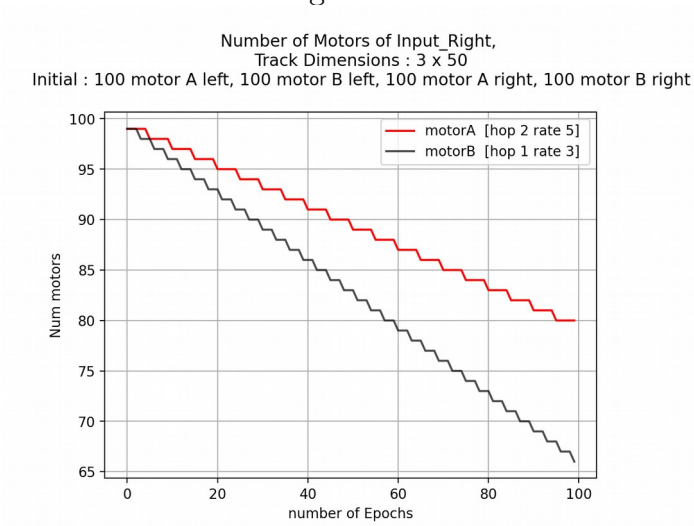

Figure 2.3

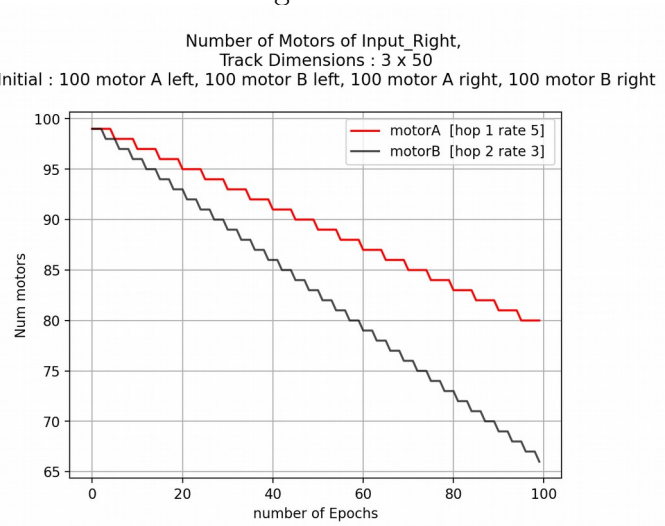

Figure 2.4

Both types of motors flow from either end. The figures 1.x and 2.x are very similar, suggesting there was no special preference for motors flowing from either end.

In this case too, the faster motor drains out faster as was seen from the previous motor.

3. Output of Left side

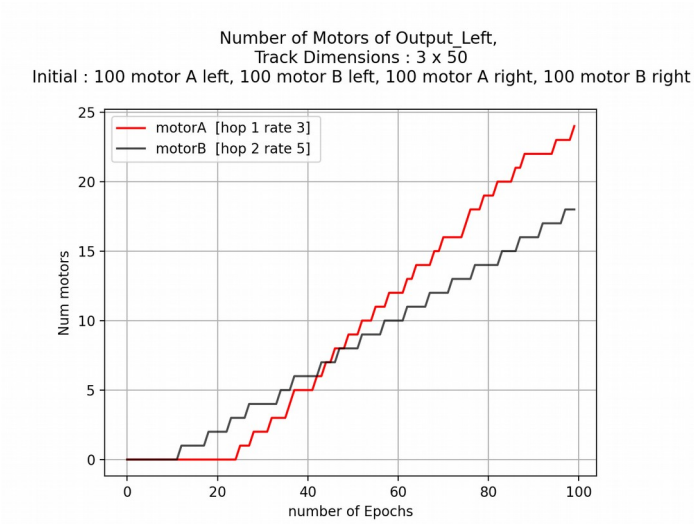

Figure 3.1

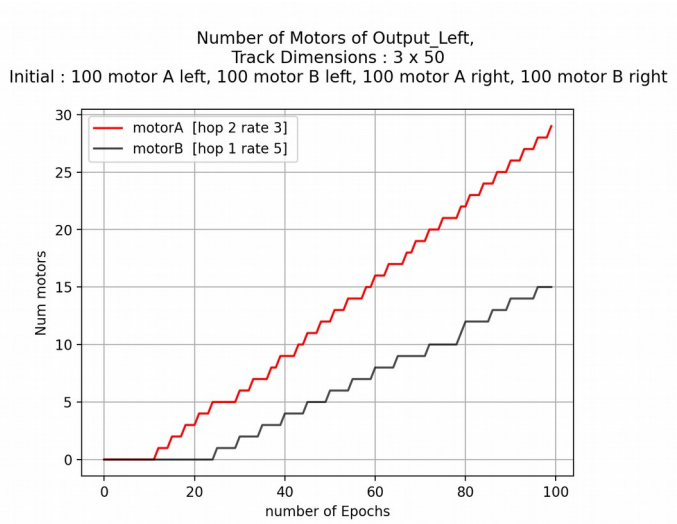

Figure 3.2

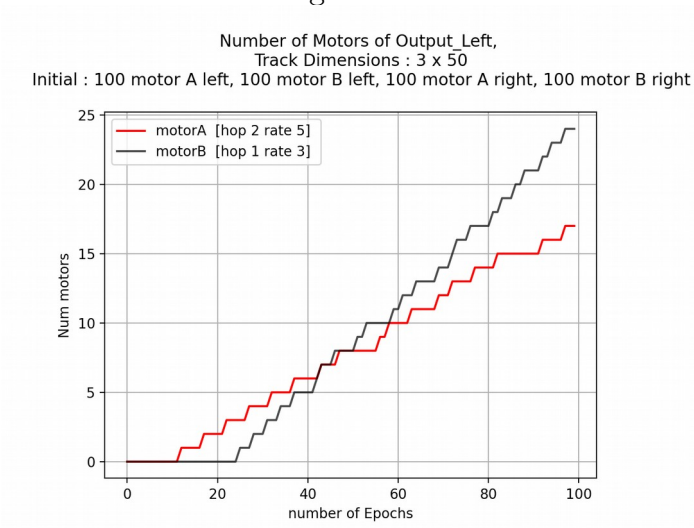

Figure 3.3

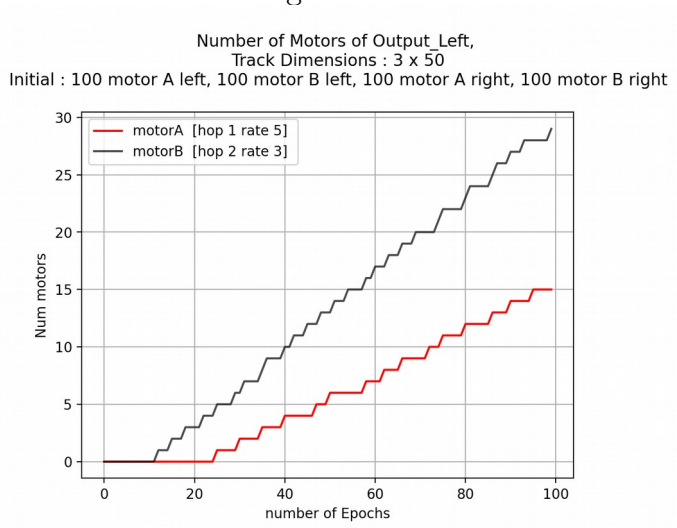

Figure 3.4

Initially the output reservoirs are empty. Then the motors start arriving and the reservoir starts to get filled. Hopping rate and influx rate have effect on the emptying out of motors. More is hop rate and more is influx rate, the faster the motor drains out from track. In Figure 3.2 and 3.4, more motors outflow than in Figures 3.1 and 3.3. So, it seems rate of outflow is proportional to hop rate and influx rate.

4. Output of Right side

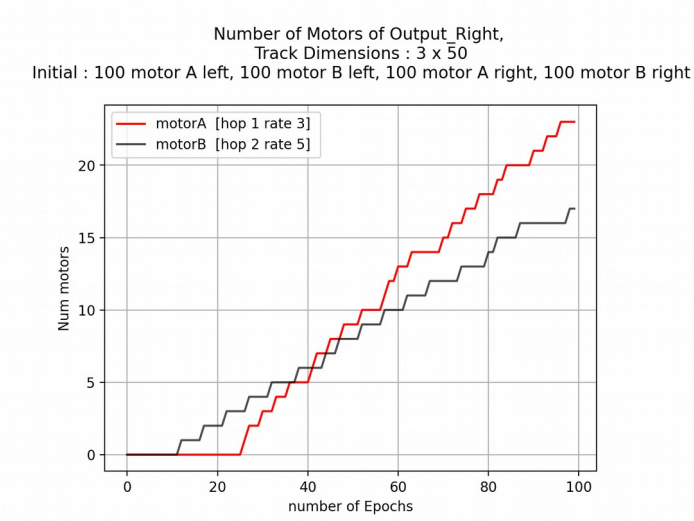

Figure 4.1

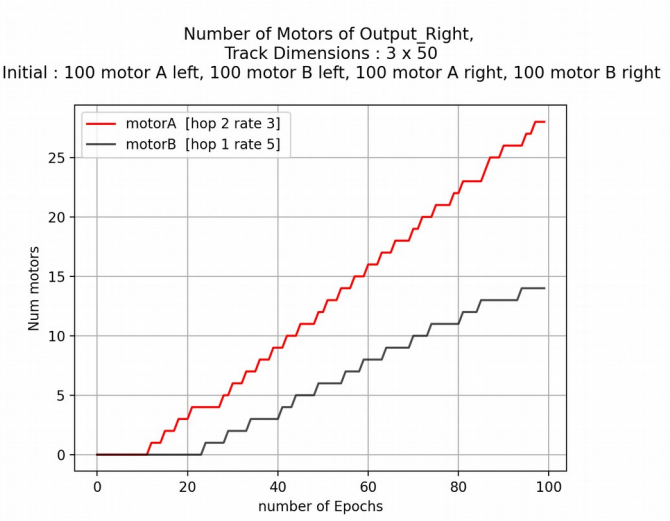

Figure 4.2

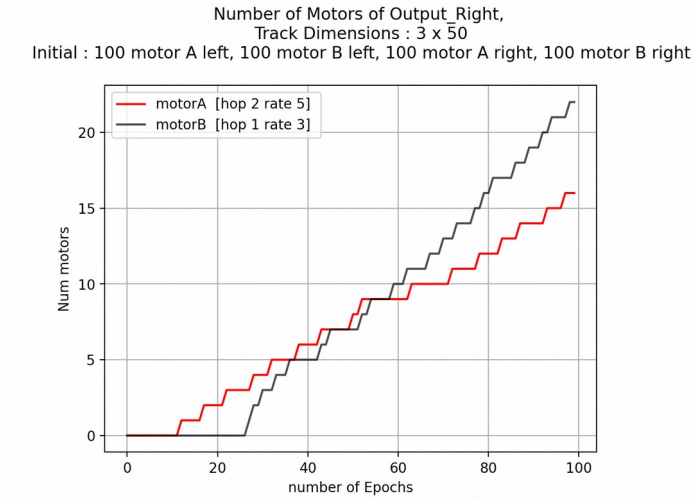

Figure 4.3

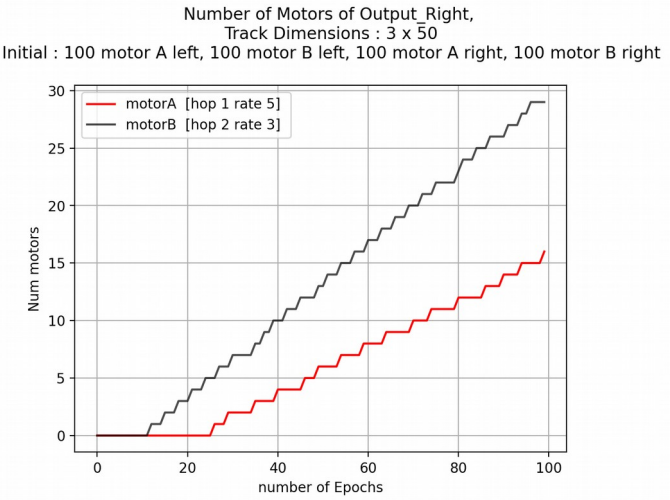

Figure 4.4

Figure 4.x and 3.x are similar to each other, suggesting that there is no special preference of motors flowing from either side. Here too, we see that output flow seems to increase with hop rate and influx rate.

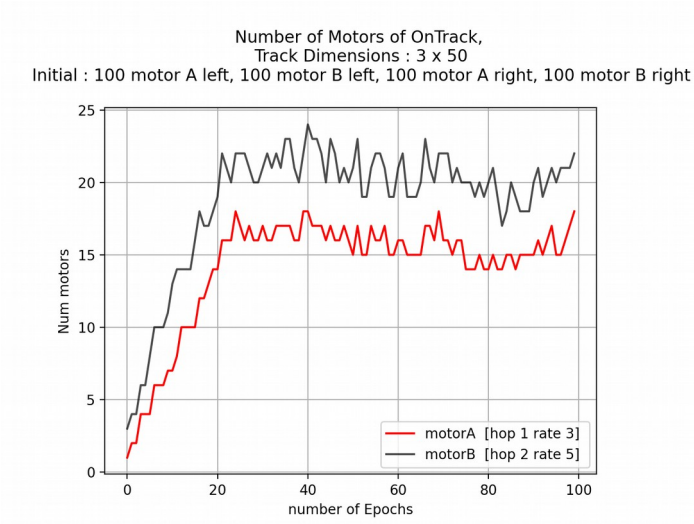

Figure 5.1

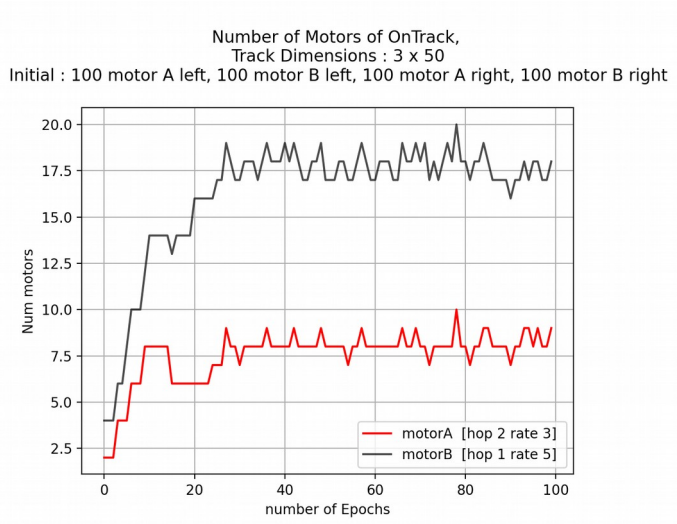

Figure 5.2

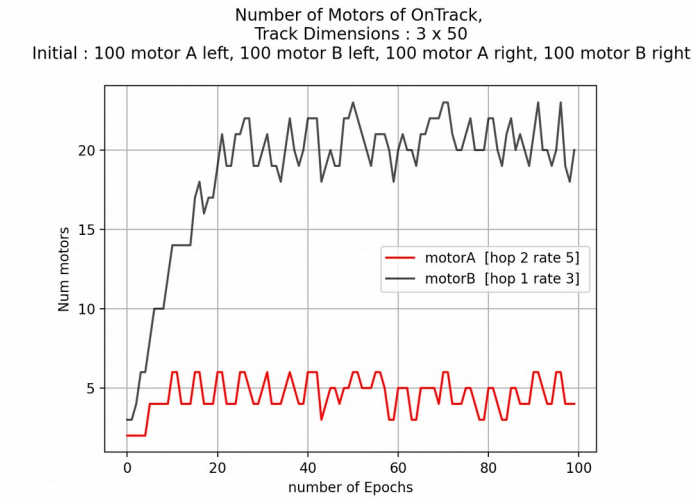

Figure 5.3

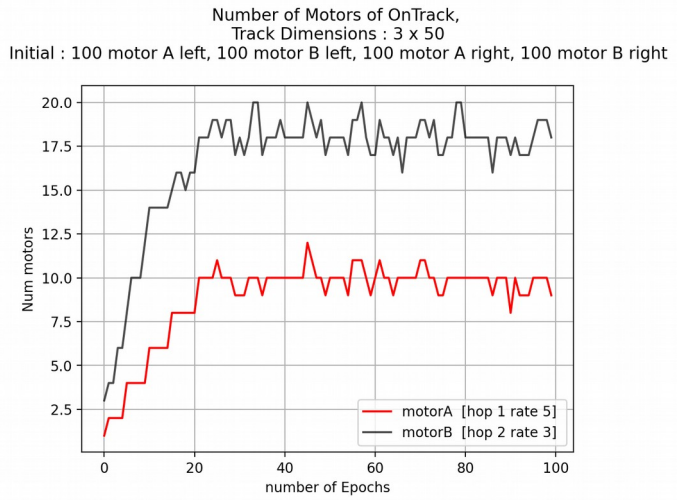

Figure 5.4

The number of motor seem to reach a steady-state situation after some time.

More is hop size, the motor seems to achieve steady state faster.

The slower a motor is (both in terms on hop rate and influx rate), the lesser is the steady state value. It might be probable that the expected number o motors may be related to the product of hop and inflow rate.

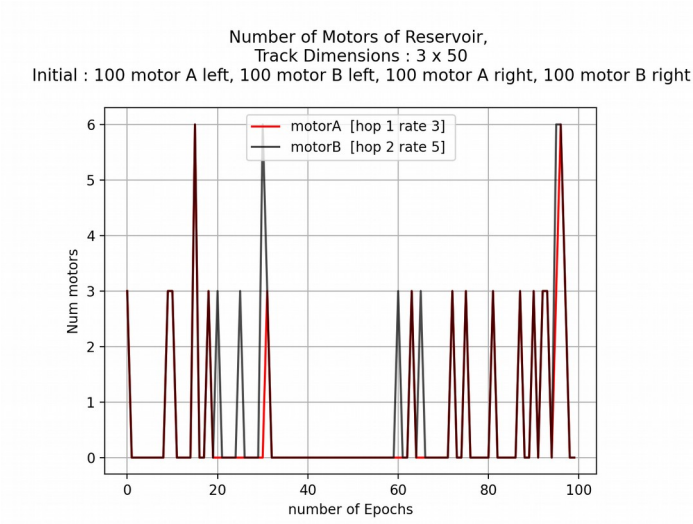

Figure 6.1

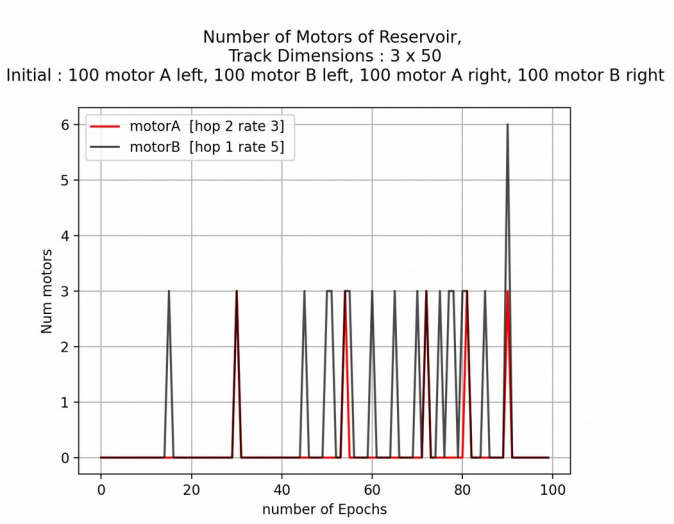

Figure 6.2

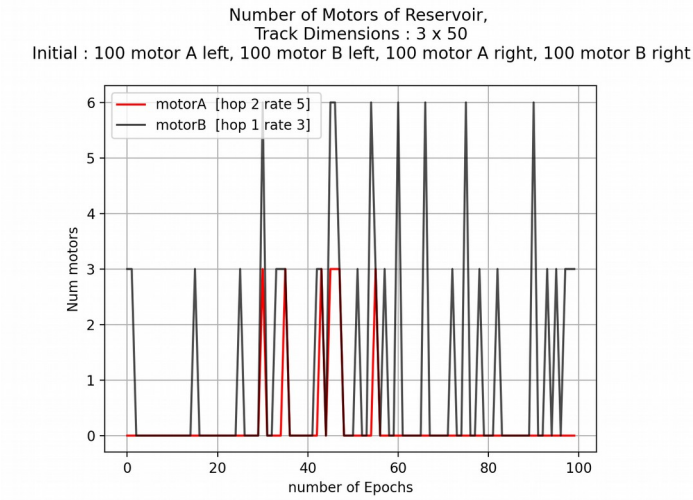

Figure 6.3

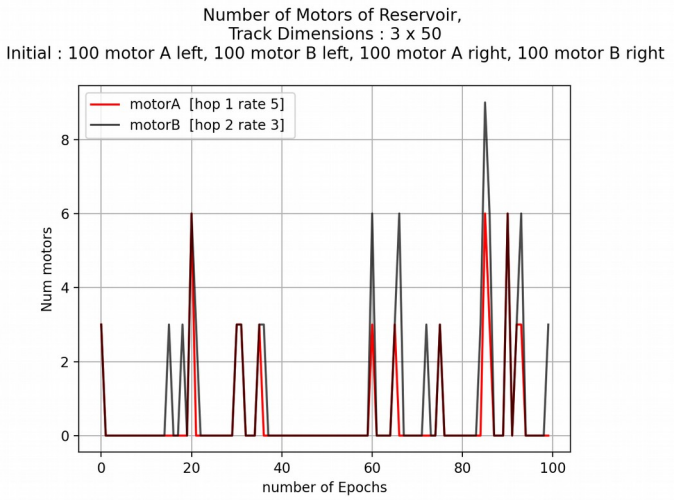

Figure 6.4

The slower hop motor seem to detach more than the slower motors. It may be due to that the slower motor faces more obstacles and hence detachment is more. Slower motor may cause a bottleneck in the movement and hence detachment rate might be more.