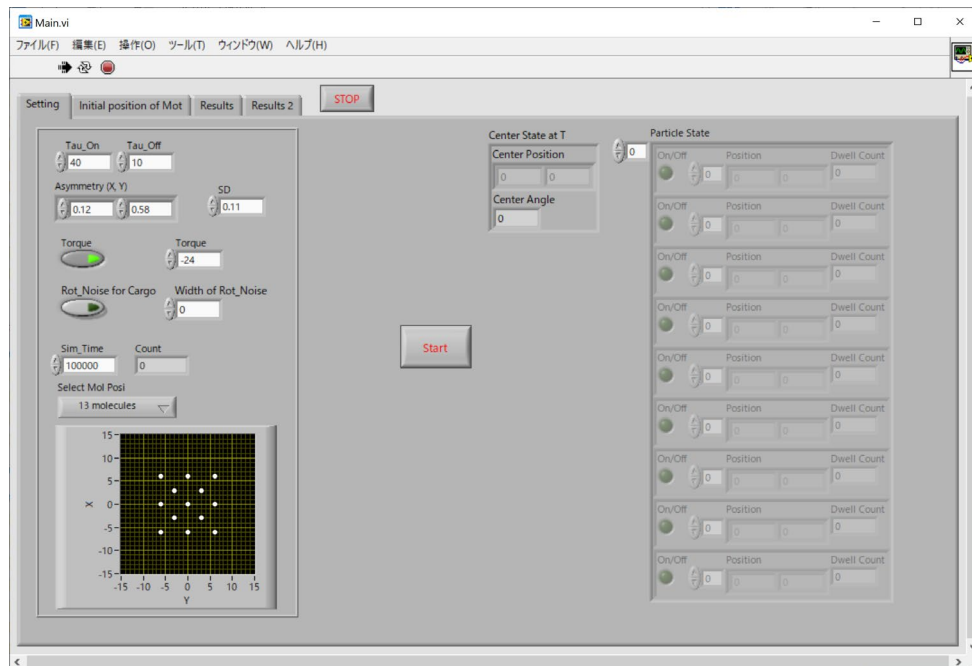


How to run “MonteCarloMotorTeam.exe”

1) Double click the file “MonteCarloMotorTeam.exe”. The following window will be appeared.



2) Set parameter values at **Setting** panel. **Default values are the values used in the paper.**

Tau_On : Lifetime of the attached state of motors on the lattice.

Tau_Off : Lifetime of the detached state of motors from the lattice.

Asymmetry(X, Y) : Bias of the translational motion of motors in the XY-plane. The values of 0.5 mean random walk, whilst the values below 0.5 results in plus-directional biased motion in the XY-plane.

SD : Standard deviation of diffusional motion of the detached motors.

Torque (button): Switch on/off torque generation by motors.

Torque (value): Torque generated by single motor particle.

Rot_Noise for Cargo: Switch on/off rotational noise for a cargo

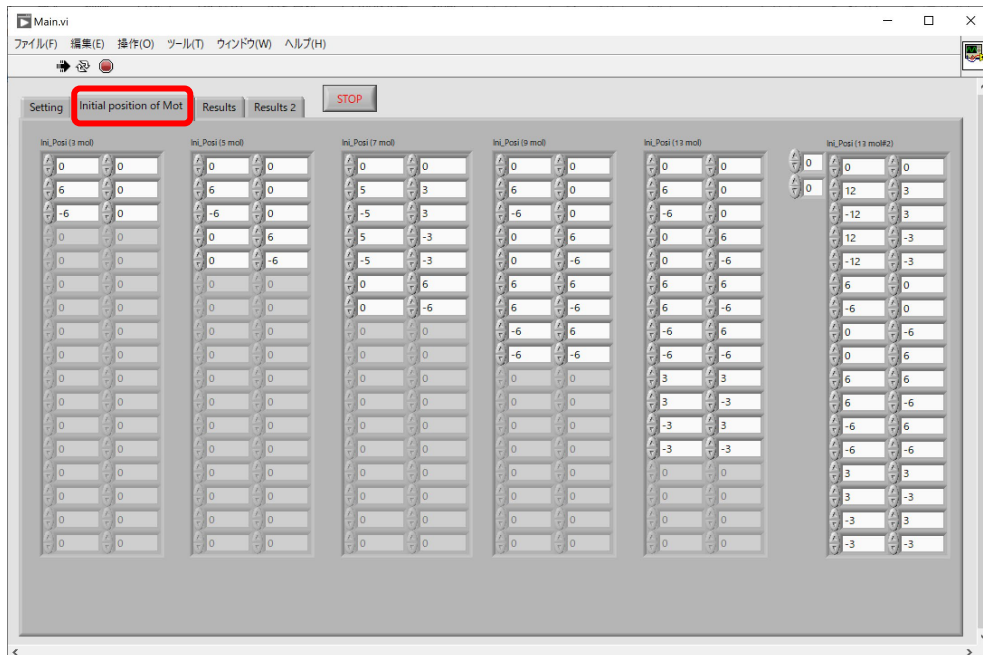
Width of RotNoise: Standard deviation of rotational noise in Gaussian

Sim_Time: Simulation time.

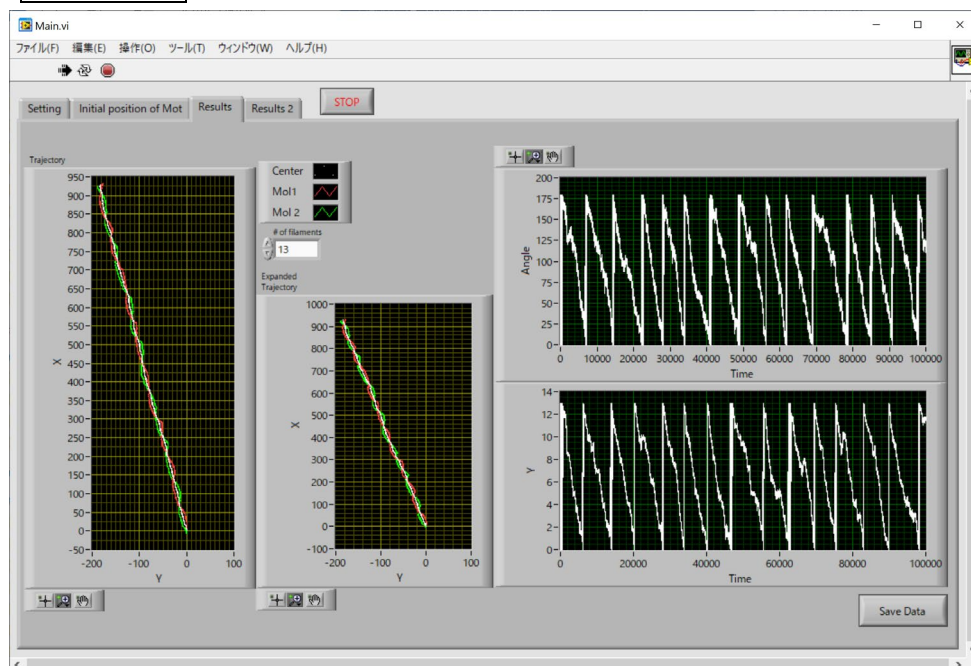
Select Mol Posi: Select a formation of motors from the list.

Start (button) : Start simulations

3) The formation of motors can be changed at the Initial position of Mot panel.



4) The Results panel will be appeared when the simulation ends.



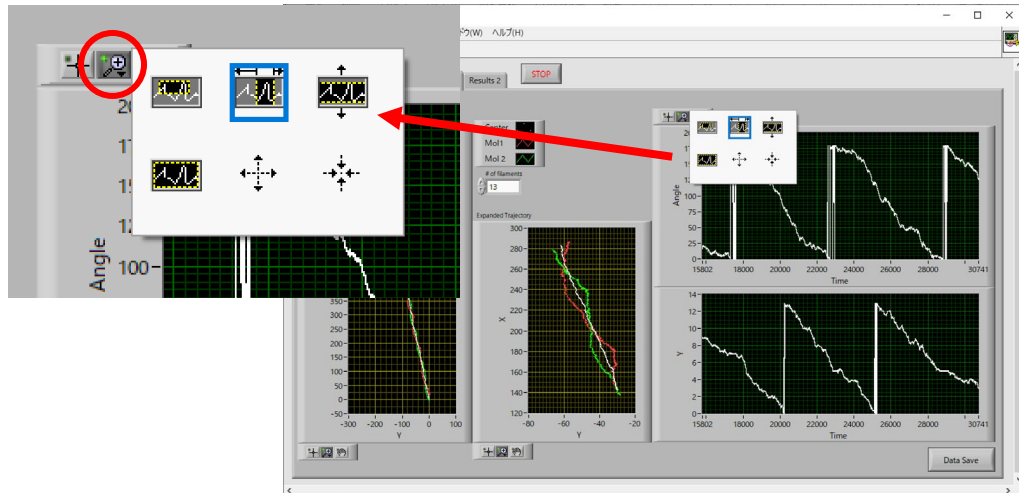
Trajectory (left graph): Three representative trajectories of the center of mass, the front motor at the initial time, and the trailing motor at the initial time, are shown.

Expanded trajectory (middle graph): Trajectory limited in the range of time, in which the time trajectory of the angle is shown.

Time vs. Angle (right upper graph): Time trajectory of the angle of the cargo

Time vs. Y (right bottom graph): Time trajectory of the center of mass in the Y-displacement. 13-periods.

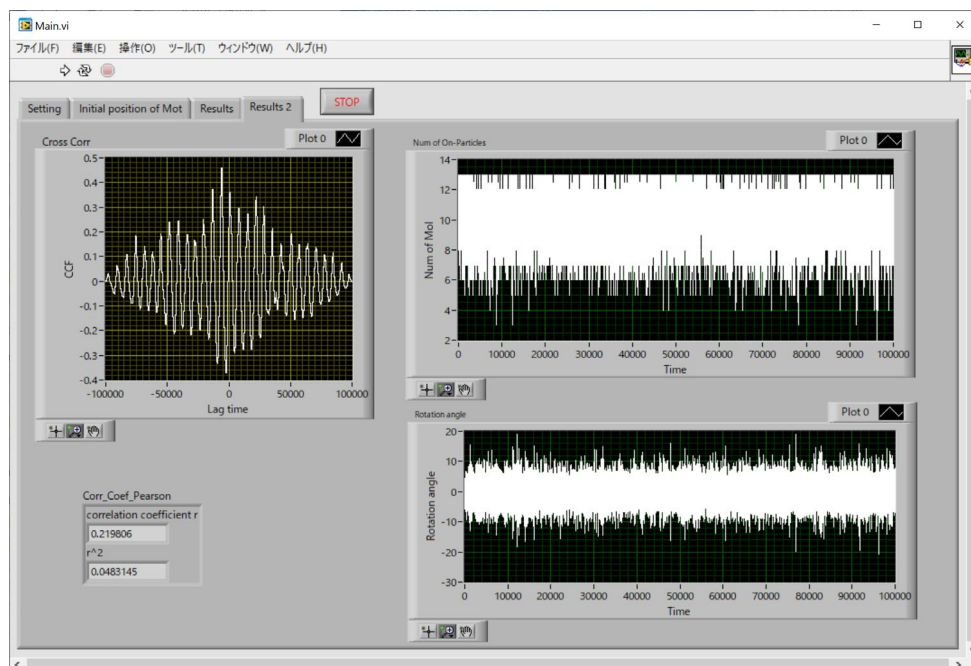
You can expand the **Time vs. Angle**. Other three graphs follows the expansion.



Save Data (button): Save data including time, positions of the center of mass, the front motor, the trailing motor, the Y-displacement, the angle.

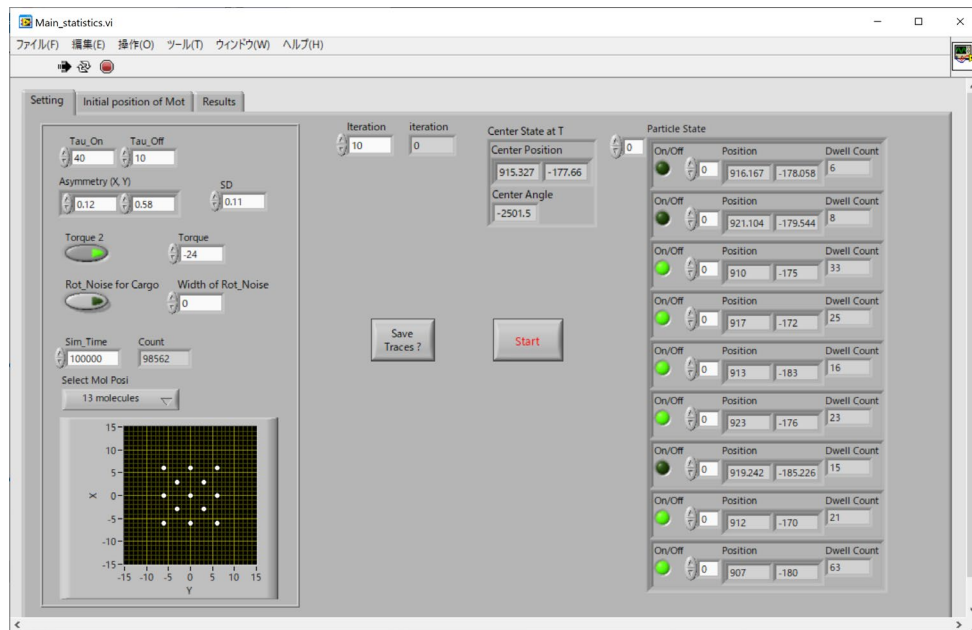
Stop (button) : Finish the program when you need not to save data.

5) The **Results 2** panel shows a cross-correlation function between time-trajectories of the Y displacement and the angle, and time-trajectories of the number of motors in the on-state and the rotation angle in one unit time.



How to run “MonteCarloMotorTeam_Statistics.exe”

1) Double click the file “MonteCarloMotorTeam_Statistics.exe”. The following window will be appeared.



2) Set parameter values at **Setting** panel. Default values are the values used in the paper.

Tau_On: Lifetime of the attached state of motors on the lattice.

Tau_Off: Lifetime of the detached state of motors from the lattice.

Asymmetry(X, Y): Bias of the translational motion of motors in the XY-plane. The values of 0.5 mean random walk, whilst the values below 0.5 results in plus-directional biased motion in the XY-plane.

SD: Standard deviation of diffusional motion of the detached motors.

Torque (button): Switch on/off torque generation by motors.

Torque (value): Torque generated by single motor particle.

Rot_Noise for Cargo: Switch on/off rotational noise for a cargo

Width of RotNoise: Standard deviation of rotational noise in Gaussian

Sim_Time: Simulation time.

Select Mol Posi: Select a formation of motors from the list. You can change the formation at the **Initial position of Mot** panel.

Iteration: Number of iteration of simulation for evaluating probability of success of sidestepping the obstruct.

Save Traces?(button) : Save traces of the center of motor particles.

Start (button) : Start simulations.

2) The **Results panel** show statistics of the X- and Y-displacements.

