

## Quantification of active force bias

➔ calculate mean x-component & mean y-component of active force directions over all particles per frame

Code to do so:

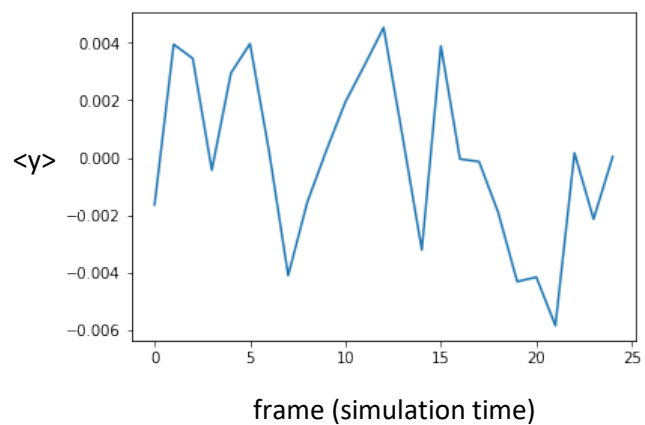
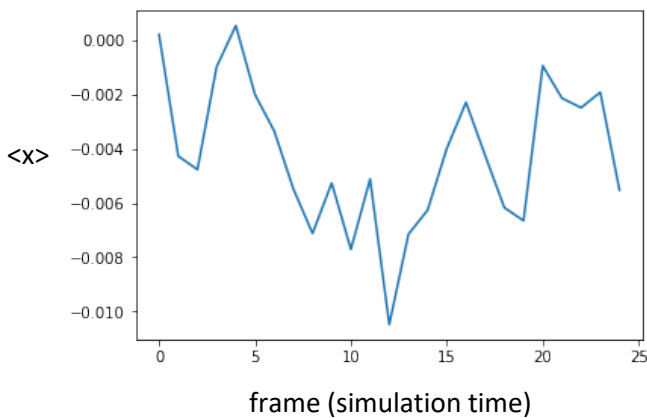
```
name = 'traj_0.3_run1_prequenched_nomomcon_t3rs.gsd'
f = gsd_pygsd.GSDFile(open(name, mode='rb'))
t = gsd_hoomd.HOOMDTrajectory(f)

or_x = []
or_y = []

for i in range(len(t)):
    # read quaternions
    w1 = t[i].particles.orientation[:,0]
    x1 = t[i].particles.orientation[:,1]
    y1 = t[i].particles.orientation[:,2]
    # convert to cartesian (z is zero)
    x = y1/w1
    y = -x1/w1

    or_x.append(np.mean(x)) # plots of or_x see below, left
    or_y.append(np.mean(y)) # plots of or_y see below, right
```

Right after simulation starts, the bias kicks in (mean x is averaging below 0 [left] and mean y around 0 [right]):



Throughout the Simulation, the bias persists (total runtime 1E9 steps):

