

Ph22 Lab5

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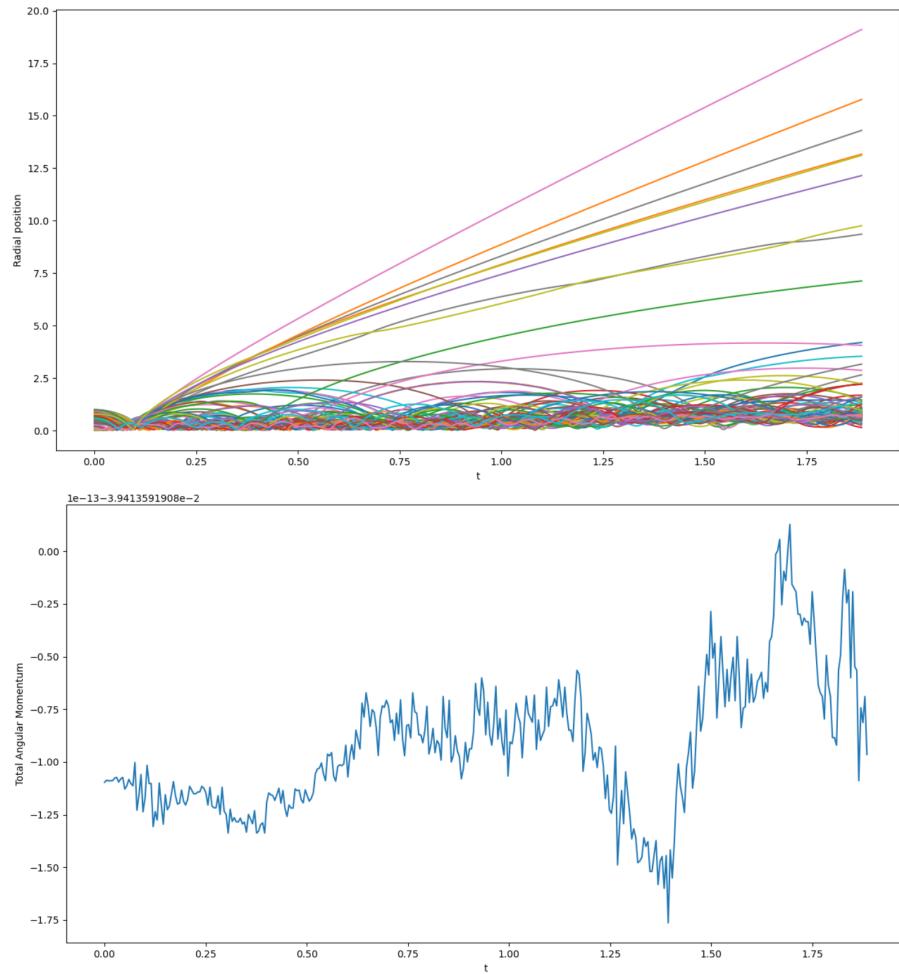
Below are sets of plots corresponding to different opening angles θ . The initial conditions were randomized within a circle of radius one with the initial velocity magnitudes one order of magnitude less than the magnitude of radial position for each particle. In each simulation of differing opening angle, the random positions and velocities were seeded with the same seeds so that the initial conditions could be maintained. The values of the initial and final total angular momentum were also recorded, along with the time to run each simulation. The snapshots of the particles with their quads and the log-log plots were record at $t = \frac{1}{2}t_{relax}, t_{relax}, \frac{3}{2}t_{relax}, 2t_{relax}$, respectively.

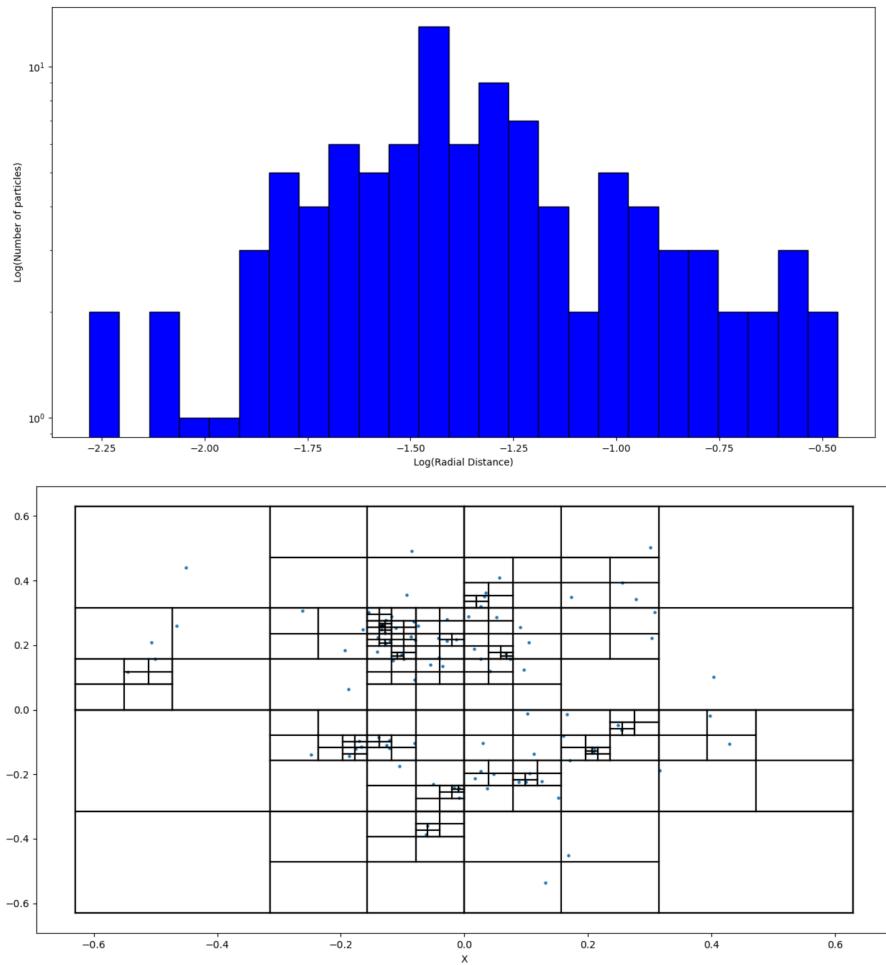
1.1 $\theta = 0$

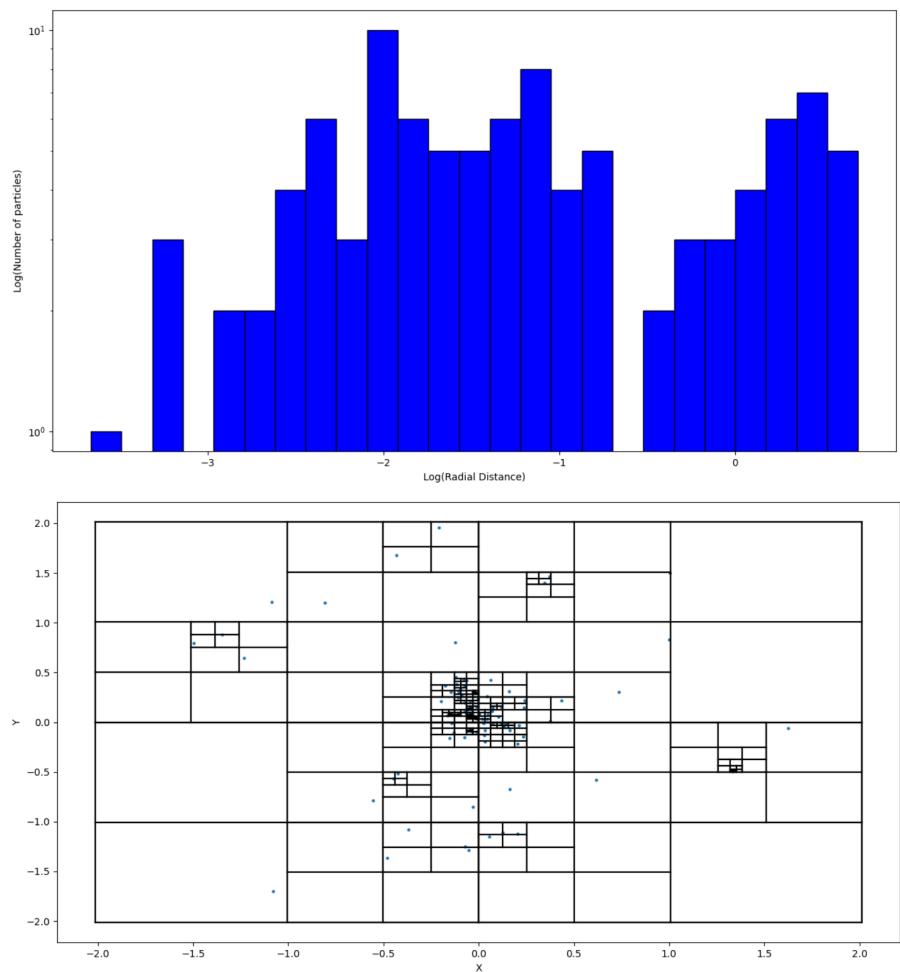
Initial total angular momentum: -0.03941359190810969

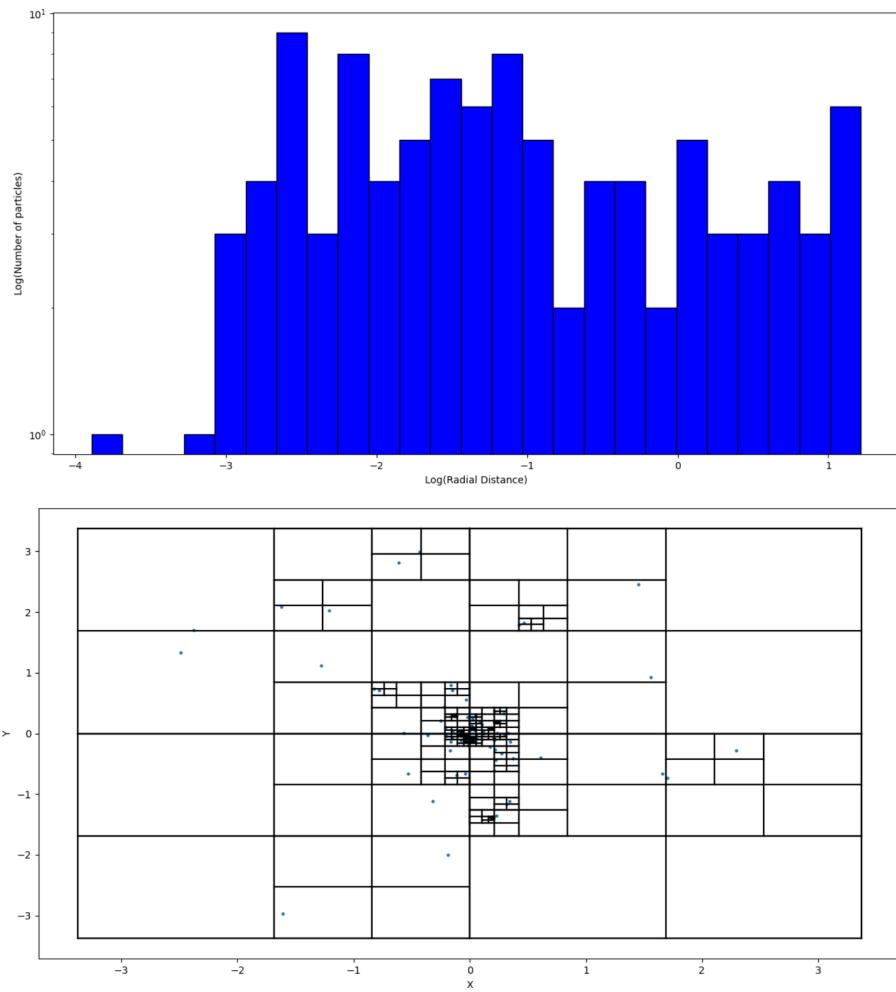
Final total angular momentum: -0.0394135919080946

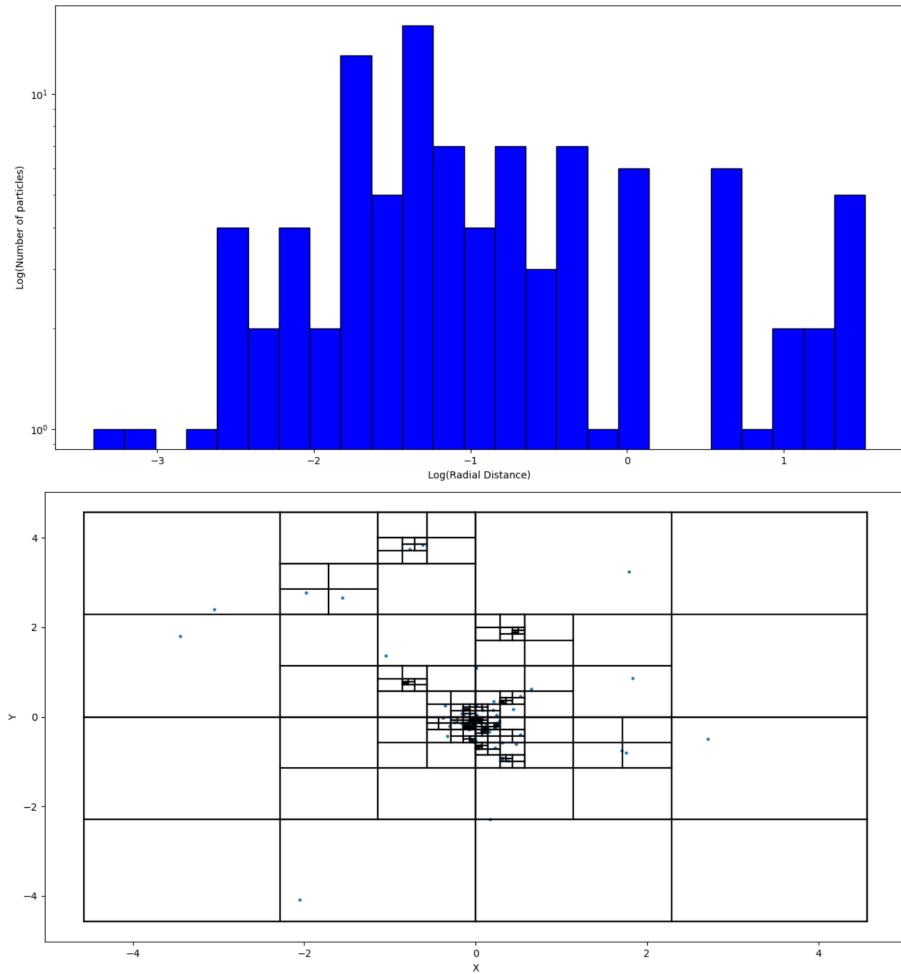
Total runtime: 64.2877286 seconds









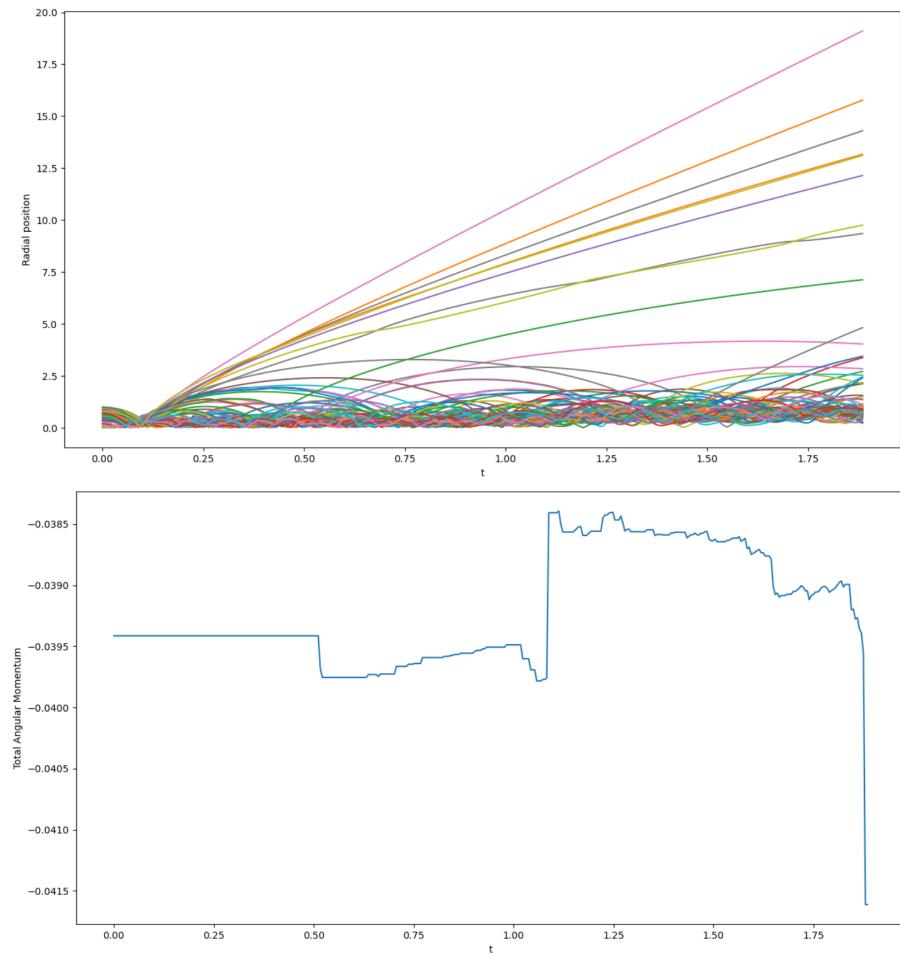


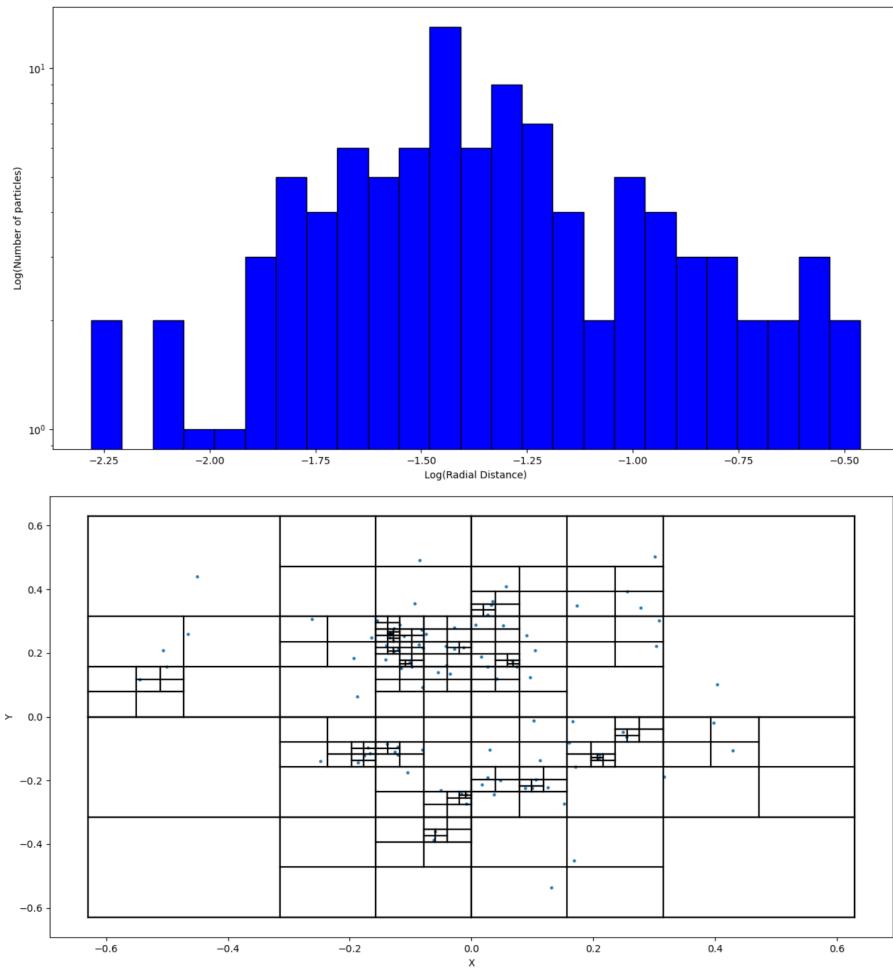
1.2 $\theta = 0.001$

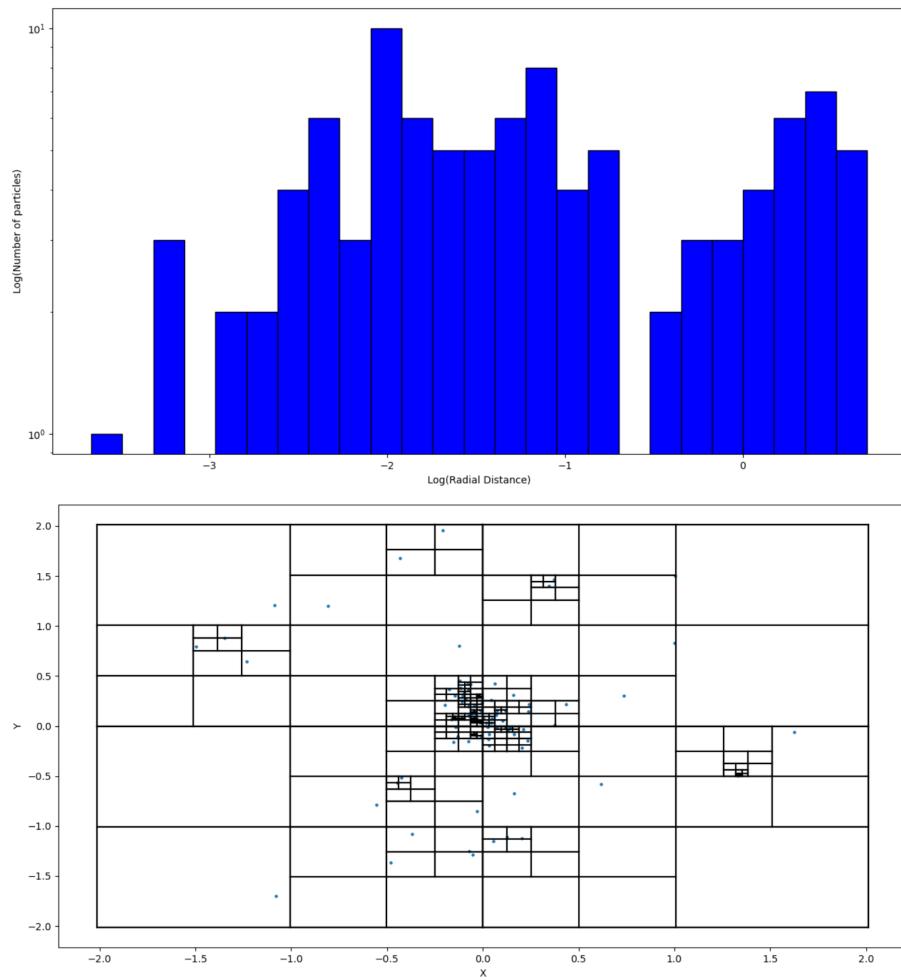
Initial total angular momentum: -0.03941359190810969

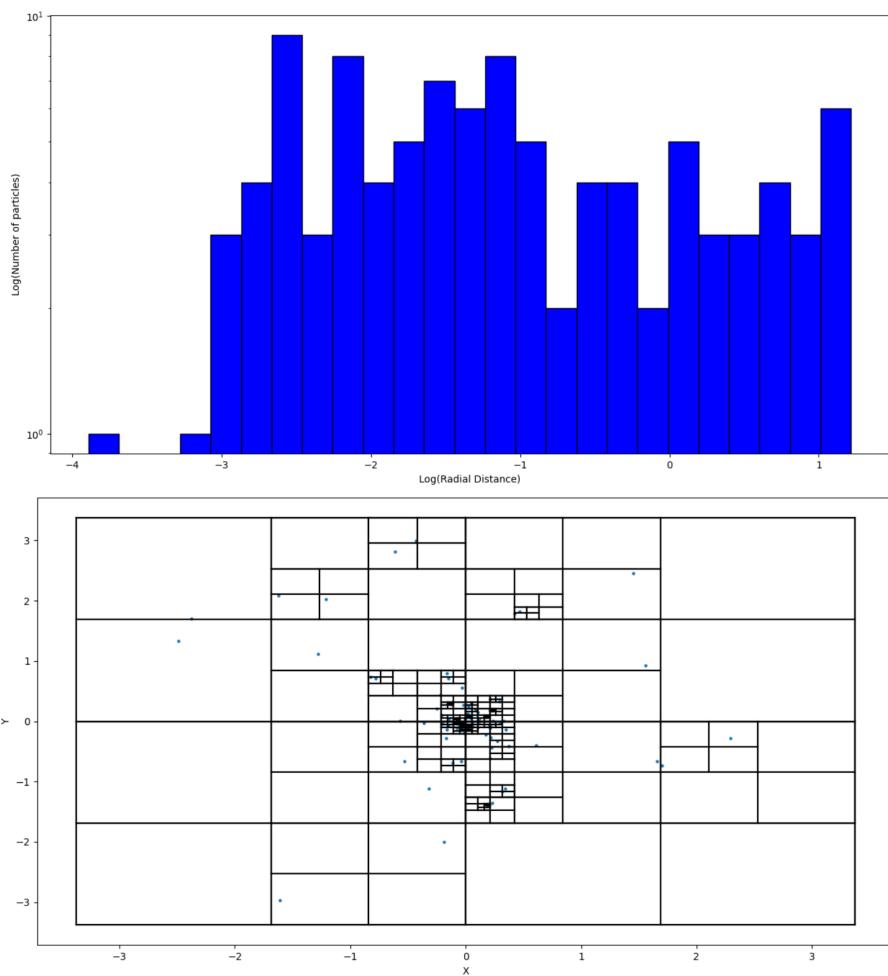
Final total angular momentum: -0.04161129709624589

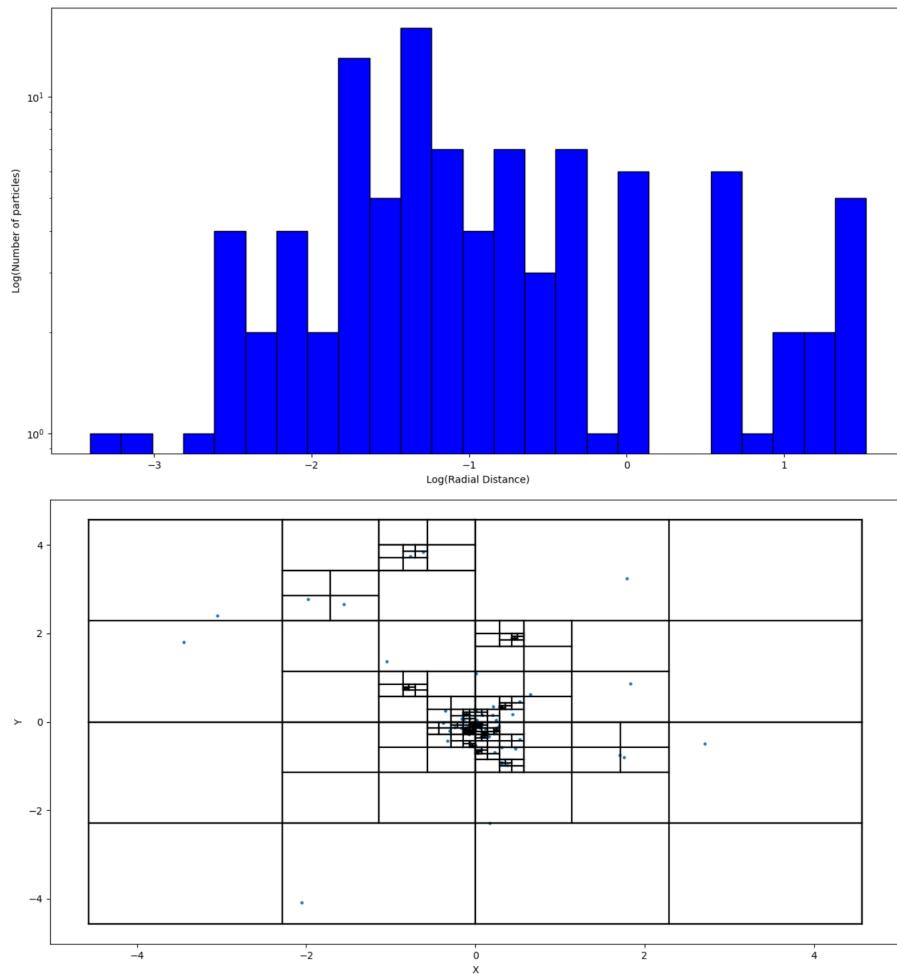
Total runtime: 60.3435061 seconds









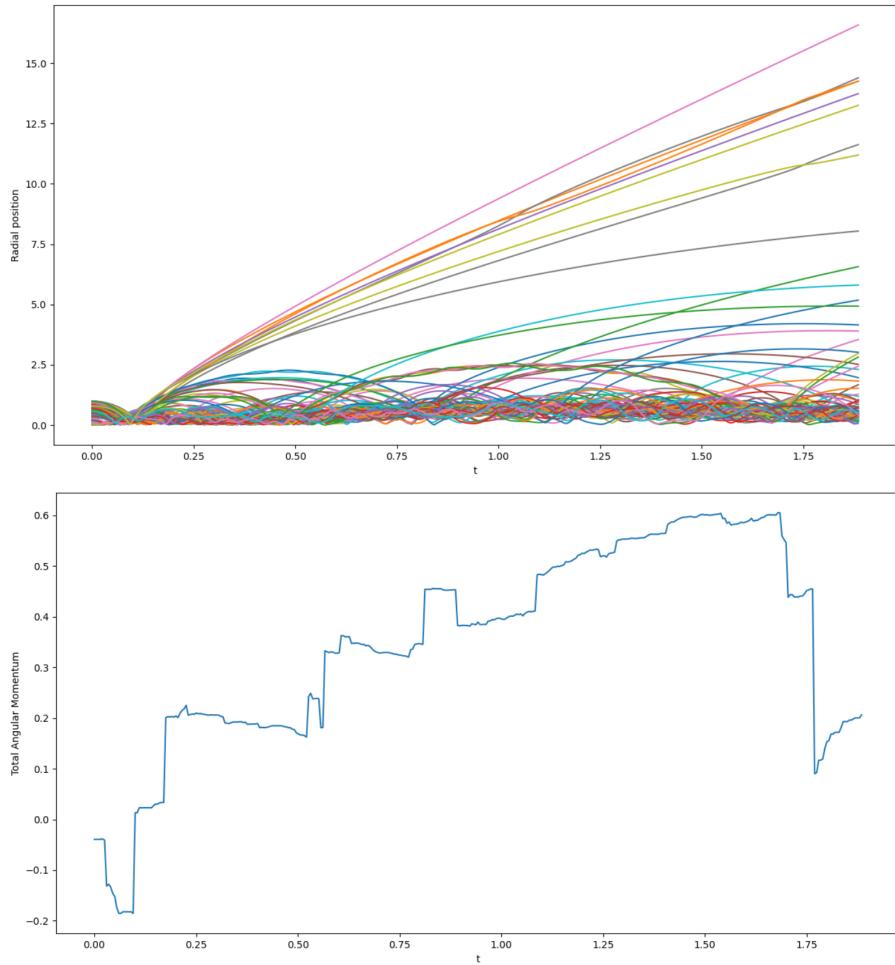


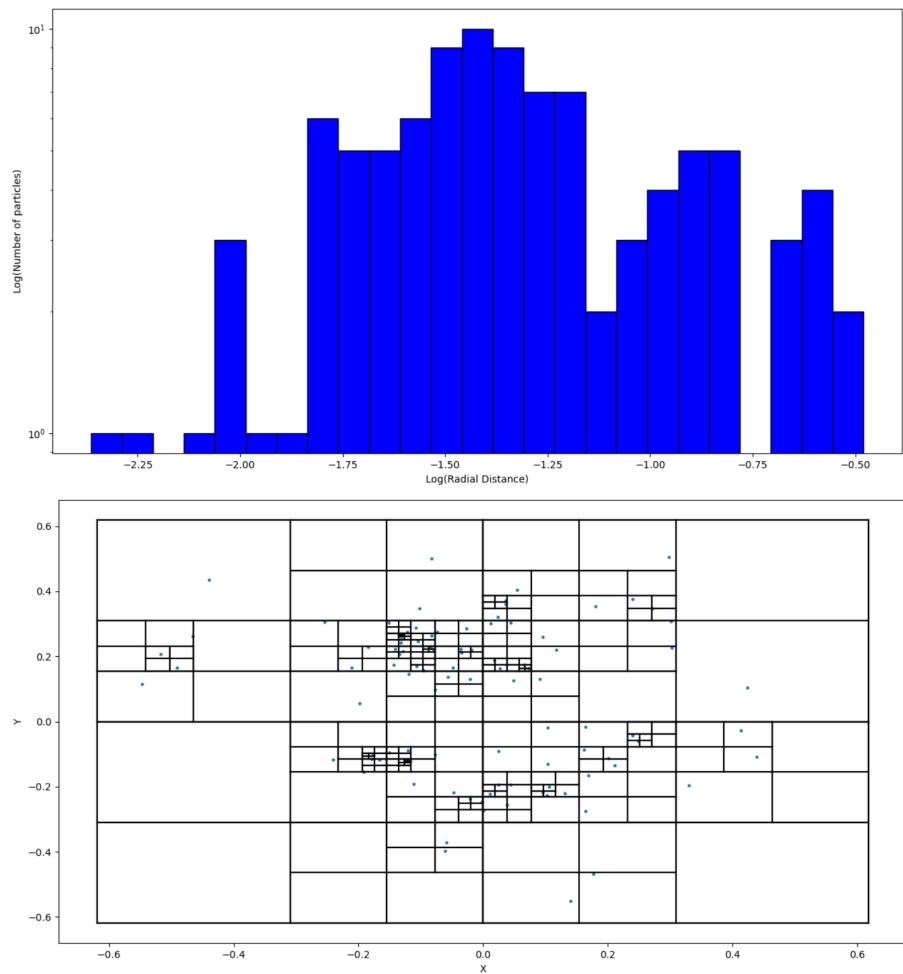
1.3 $\theta = 0.01$

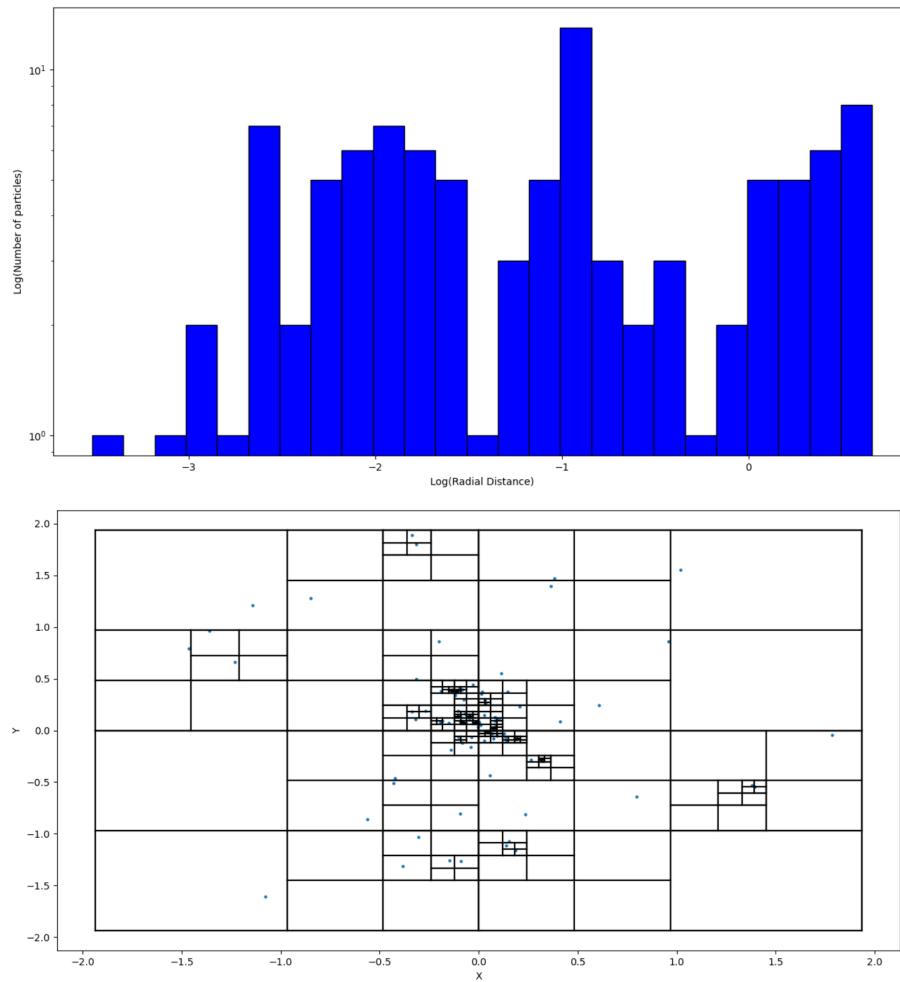
Initial total angular momentum: -0.03941359190810969

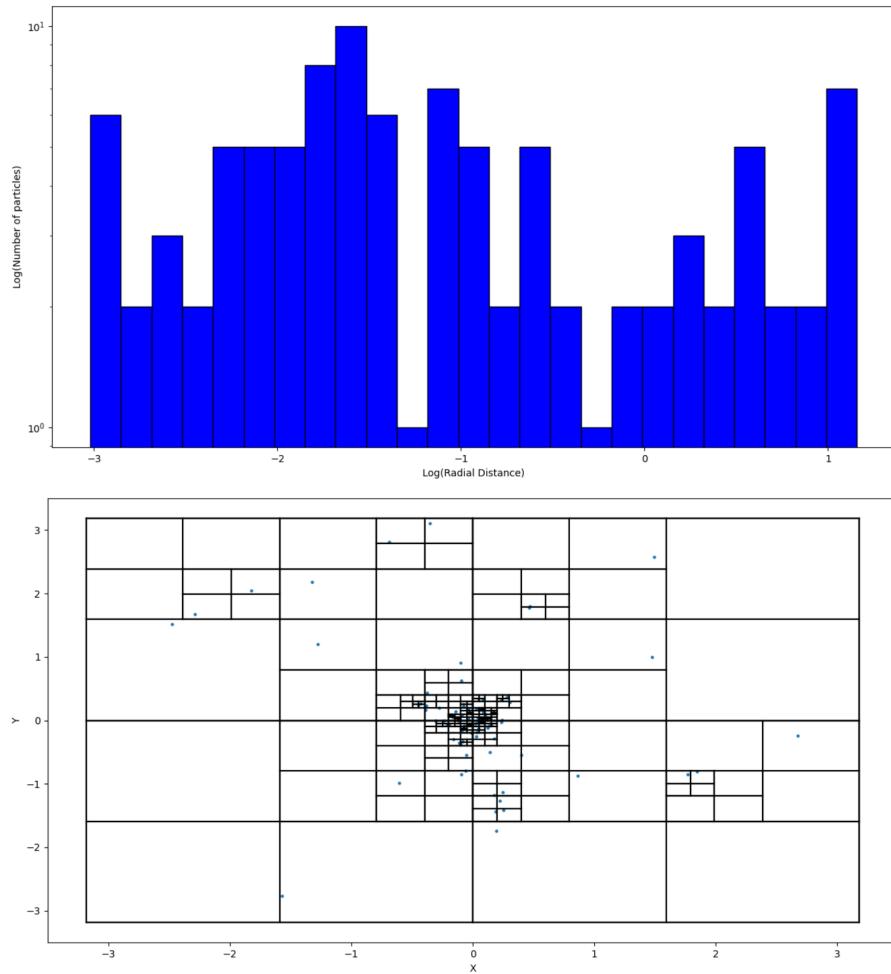
Final total angular momentum: 0.2062848092419294

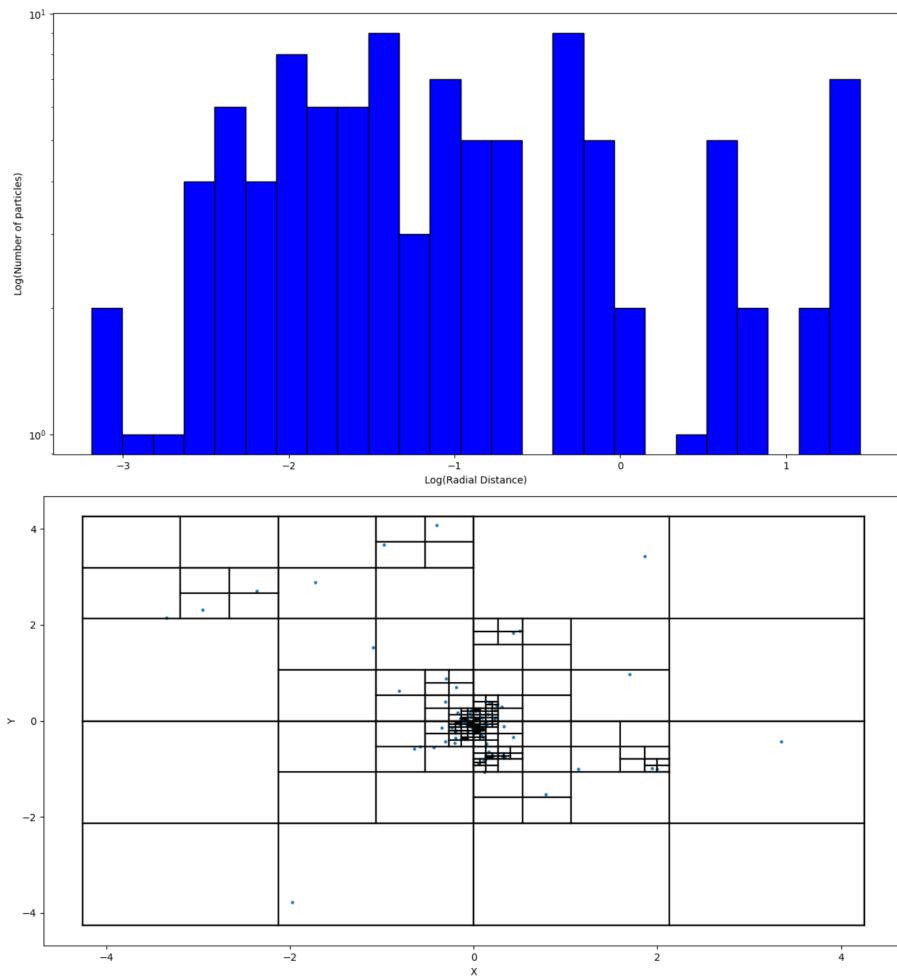
Total runtime: 64.2877286 seconds











1.4 $\theta = 0.1$

Initial total angular momentum: -0.03941359190810969

Final total angular momentum: 0.8031795626131957

Total runtime: 52.3962347 seconds

