PHYS 512: N body simulation project

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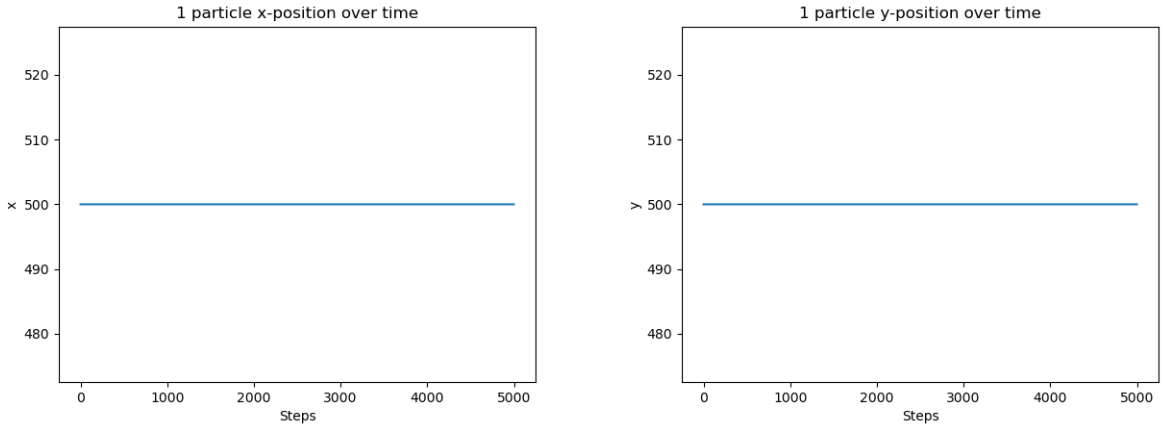
The code used to run the N-body simulation is strongly inspired by, and adapted from the code provided in `nbody_nb_fft.py`. In particular, the single body potential field generation, and the gradient calculation functions are directly copied.

1 Part 1: Single particle

Figure 1 shows the time evolution of the x and y positions of a single particle with zero initial velocity. As expected, there is no evolution and the particle does not move since there are no external forces acting upon it.

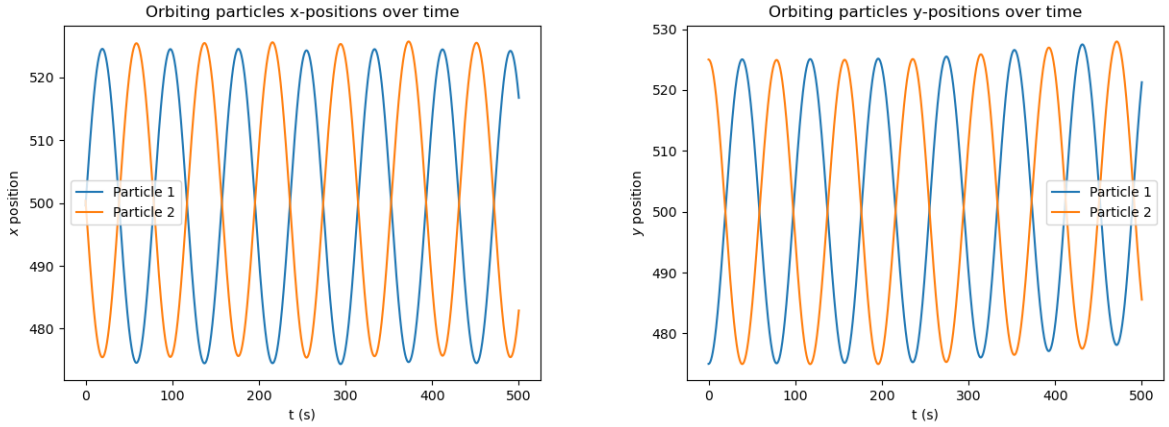
Figure 1: Single particle stays stationary



2 Part 2: 2 particle orbit

Figure 2 shows the time evolution of the x and y positions of two particles in a circular orbit. Running the simulation with a 0.01 second time step for 50000 steps, both particles maintain a stable orbit.

Figure 2: Two particles in orbit



Code