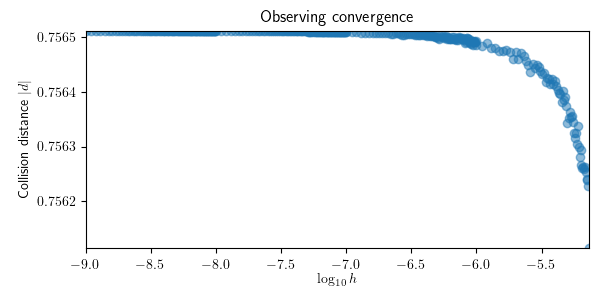
Two nested loops iterate through every particle. The particle in the outer loop, , is compared to every other particle in the inner loop. The Euclidean distance between and is calculated. If it is smaller than , the particles are merged. The resultant particle has mass equal to ; the velocity of is calculated using classical mechanics as if and had collided. Various pointers are decremented to remove . If the two particles do not merge, the force they exert on each other is calculated. Once all particles have been considered, a second loop updates the position and velocity of each particle using the calculated forces.

In this simulation, two collisions occur. Timesteps were in the range , with the latter the largest timestep to yield collision points. The accuracy of the simulation is measured using the Euclidean distance between the first and second collision points, . Results are plotted below. It is clear that *does* converge, to approximately , and that a timestep of approximately is sufficient to achieve this.

The order of convergence can be calculated using the difference between two errors of different timesteps and , as can be experimentally measured: . Using an initial value , below is plotted the distance between the second collision points at timesteps and against . Fitting a curve to the data using results in values of and .

