Hand-in Exercise C

N body simulations

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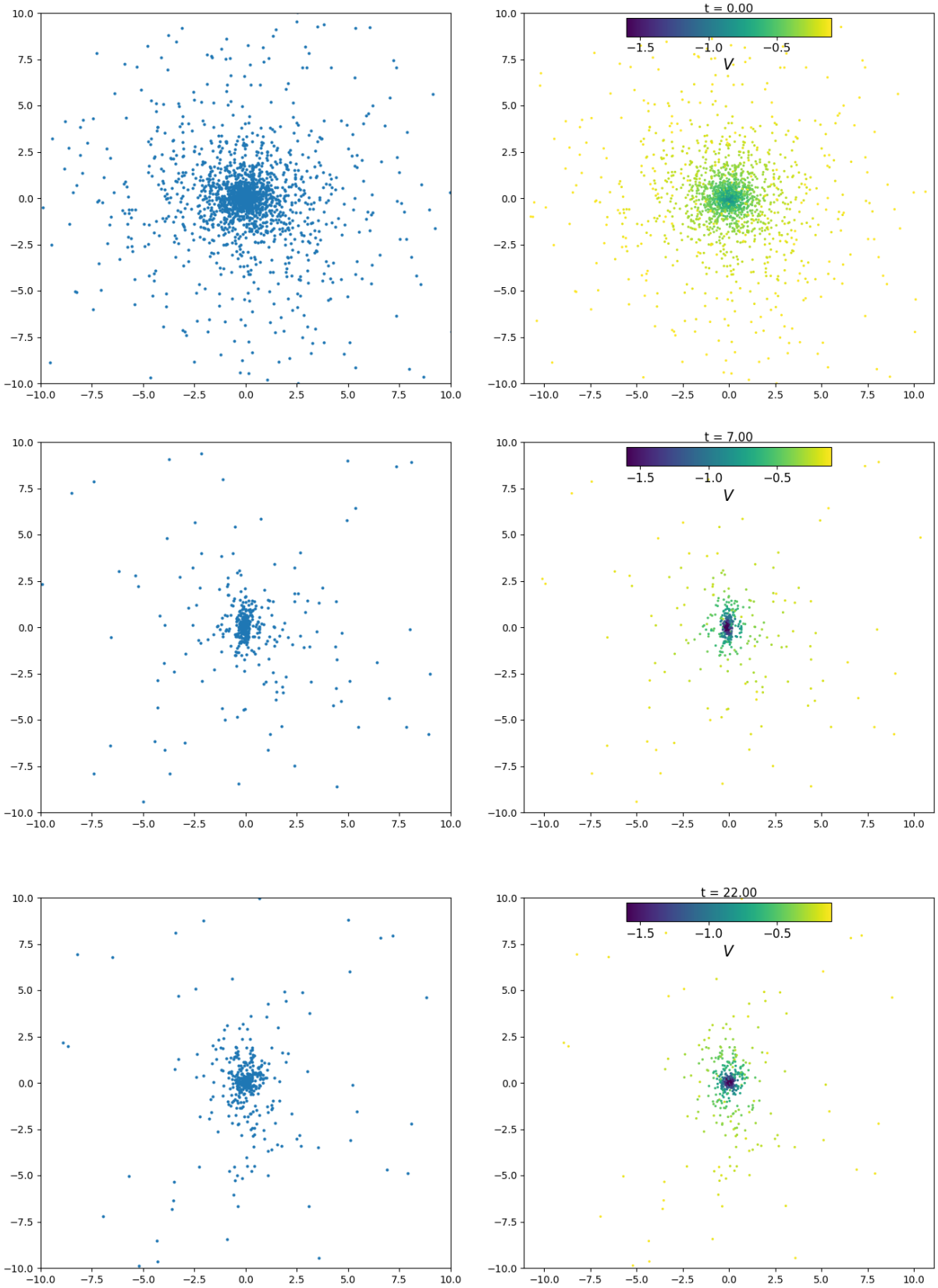
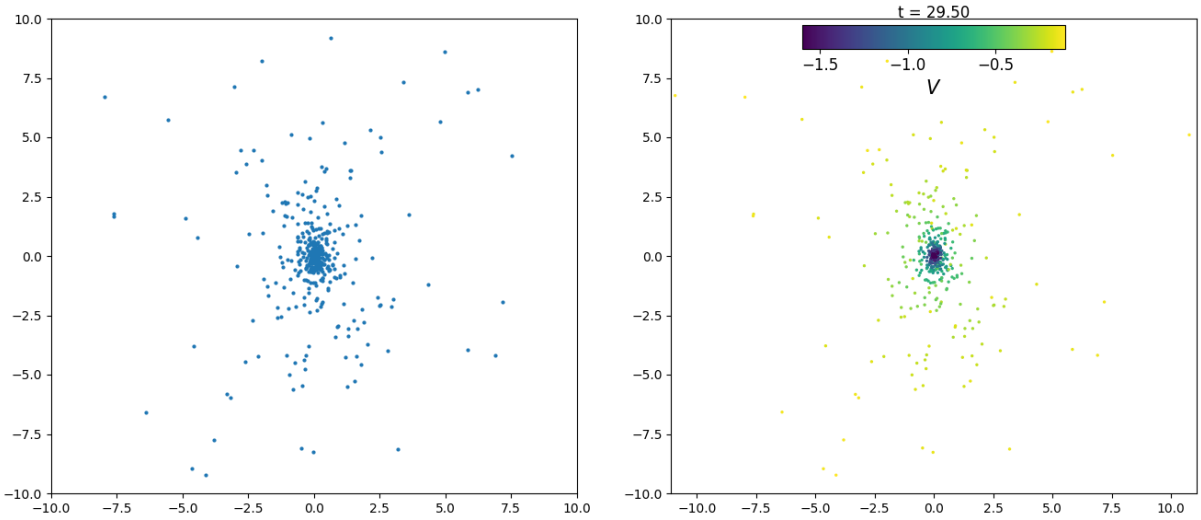
Task 1: Simulation with 512 particles





During this n-body simulation we are generating two plots at every interval of 0.5 units , while the calculation itself is progressing with dt = 0.01. The first plot is a position plot, showing the (x,y) coordinates at 4 different times, and we can see that in the beginning the particles were very spread out and then they start to clump together as soon as in the next time interval at t = 7 units . The second plot is an energy plot, that shows the potential energy of each particle with a colour map suggest that blue particles, which are seen in the middle of the clump have a greater potential energy than the particles at the edges.

Task 2: Plot a graph of number of particles used in the simulation vs average taken for each calculation in a 2 unit interval