N-body simulation of an open galactic cluster

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Abstract

In this project we look at the Newtonian N-body problem using various numerical methods for solving ordinary differential equations. Specifically of interest is the fourt order Runge-Kutta method and the Velocity-Verlet method.

1 N-body problem

The N-body problem considers N point masses denoted m_i with $i = 1, 2, \ldots N$ in an inertial reference fame in three dimensional space