Help

Main variables:

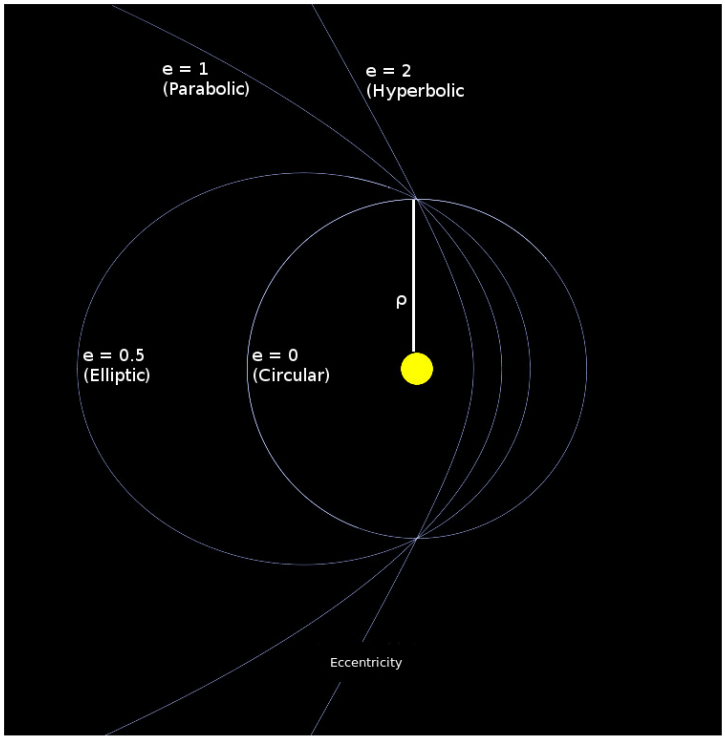
Name	Description
Mechanics Timestep	The time in seconds that acceleration is assumed to be constant for. Set higher for faster simulation, lower for more accurate simulation
Planetary Radii Multiplier	The factor by which the size of bodies are multiplied when drawn to the screen. (At real size, most planets cannot be seen)
Orbit Trail Length	The length of the trails of each body, as a number of timesteps

Below are descriptions of the various orbital elements you can change

Name	Description	Symbol	Range
Semi-latus rectum	the distance between two bodies at right angles to the “periapsis” (minimum point)	ρ	[0,+∞)
Eccentricity	A measure of the shape of the orbit, illustrated below	e	[0,+∞)
Inclination	the angle between the orbital plane and the reference plane	i	[0,180]
Longitude of the ascending node	the angle from the reference direction anticlockwise to the point where the orbiting body rises above the reference plane	Ω	[0,360)
Argument of periapsis	the angle from the ascending node anticlockwise to the periapsis.	ω	[0,360)
True anomaly	the angle from the periapsis anticlockwise to the current position of the body.	ν	[0,360)

The best way to understand how these work is to modify the variables of an existing system. For each body you can also edit its name and which planet it is orbiting. If it is set to not be orbiting any planet, the orbital elements will be ignored and it will be placed at the origin with 0 velocity.

Eccentricity/Semi-latus rectum:



Existing Systems

There are several existing systems to try:

Name	Description
Standard	Our solar system
Inner	The inner 4 planets of our solar system
EccentricityDemo	A demonstration of how eccentricity affects orbits, as shown above
RoguePlanet1/RoguePlanet2	Two examples of the effects of a rogue planet entering our solar system
SuperJupiterEarth	An example of three body mechanics, with earth orbiting a planet much more massive than jupiter
Binary	A binary star system, showing non-Keplerian orbital mechanics

In Simulation Controls:

Control	Effect
Esc	Pause and edit variables
L	camera lock
R	Reset camera
F	Change camera focus
C	Toggle stereoscopic camera
P	Pause
Mouse	Move Camera
Scroll	Zoom
Up/Down	Increase/Decrease planetary radii multiplier
Right/Left	Increase/Decrease mechanics timestep
PgUp/PgDown	Increase/Decrease orbit trail length