Particle Affectors

Affectors are an optional component of a particle system. They can perform a variety of manipulations to the simulation, such as altering the trajectory of particles or prematurely ending their life in the simulation. For performance reasons, it is recommended not to use affectors in high-volume particle systems.

The following affector components control how the particles are animated during their lifetime:

- Attractor attracts particles towards a specific point.
- Gravity accelerates particles to a vector of the specified magnitude in the specified direction.
- Point Rotator rotates particles around a pivot point.
- Wander applies random wave curves to particles.

If the system has multiple affectors, the order of affectors may result in different outcome, as affectors are applied one after another.

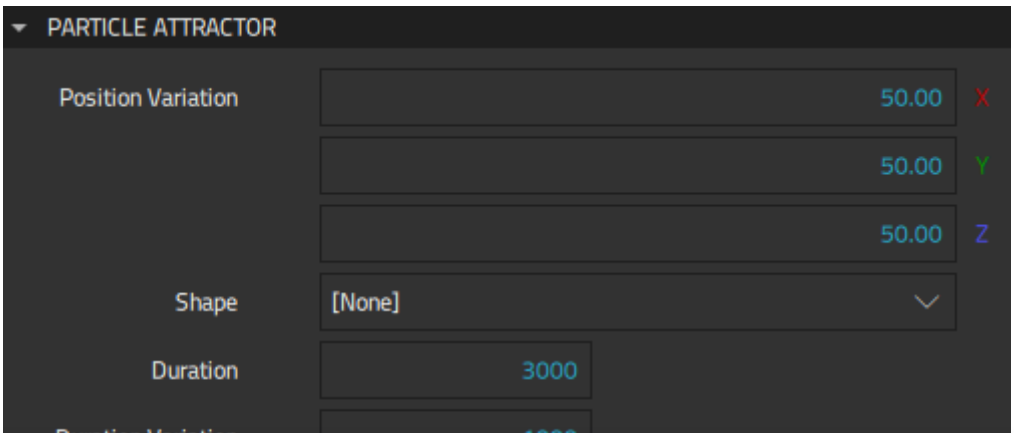
By default, affectors affect all particles in the system, but you can limit this to the particles listed in Properties > Particle Affector > **Particles**.

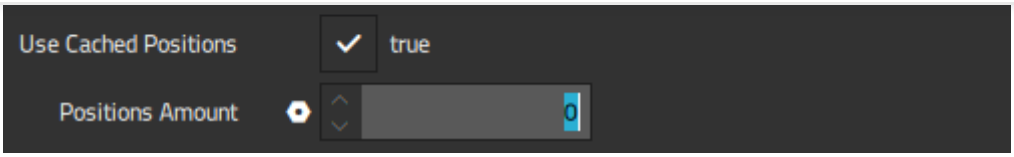
Attractor

The **Attractor** component attracts particles towards a position inside the View 3D component instance. To model the gravity of a massive object whose center of gravity is far away, use an instance of the Gravity component.

The attraction position is defined either by using the position of the attractor and the value of **Position variation** or by selecting an instance of the **Particle Shape** or **Model Shape** component in **Shape**. If both position and shape are defined, the shape is used.

Specify settings for **Attractor** components in **Properties** > **Particle Attractor**.





Position variation specifies the variation on attract position. Instead of attracting particles into a single point, it attracts them randomly towards a wider area. For example, to attract particles into some random point inside a (50, 50, 50) cube at position (100, 0, 0) within 2 to 4 seconds, set **X**, **Y**, and **Z** to 50.00, **Duration** to 3000, and **Duration variation** to 1000.

In **Shape**, select an instance of the Particle Shape or Model Shape component to attract particles into a random position inside the shape. When the shape is defined, it is visualized in the **3D** view.

Duration specifies the duration in milliseconds that it takes for particles to reach the attraction position. When the value is -1, **Particle Emitter** > **Life span** is used as the duration. If you specify **Duration variation**, the actual duration to reach the attractor is between duration minus duration variation and duration plus duration variation.

Select **Hide at end** to make the particle disappear when it reaches the attractor.

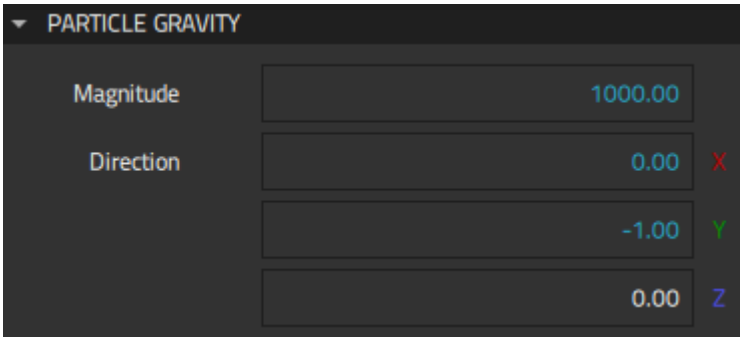
Select **Use cached positions** to cache possible positions within the attractor's **Shape**. Cached positions give less random results but are better for performance.

Positions amount specifies the amount of possible positions stored within the attractor's **Shape**. By default, the amount equals the particle count, but you can specify a lower amount for a smaller cache. Specify a higher amount for additional randomization.

Gravity

The **Gravity** component models the gravity of a massive object whose center of gravity is far away, and thus the gravitational pull is effectively constant across the scene. To model the gravity of an object near or inside the scene, use an Attractor component instance.

Specify settings for **Gravity** component instances in **Properties** > **Particle Gravity**.



Magnitude defines the magnitude in particle position change in degrees per second. A negative value accelerates in the opposite way from the direction specified in **Direction**. Direction **X**, **Y**, and **Z** values are automatically normalized to a unit vector.

Point Rotator

Specify settings for **Point Rotator** component instances in **Properties** > **Point Rotator**.

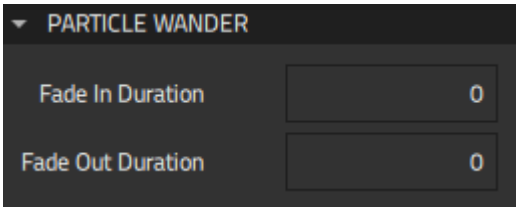
The **Point Rotator** component rotates particles around the pivot point specified in **Pivot point** towards the direction specified in **Direction**. Direction **X**, **Y**, and **Z** values are automatically normalized to a unit vector.

Magnitude defines the magnitude in particle position change in degrees per second. A negative value accelerates in the opposite way from the direction specified in **Direction**.

Wander

The **Wander** component applies random wave curves to particles. Curves can combine global values that are the same for all particles and unique values that differ randomly.

Specify settings for **Wander** component instances in **Properties** > **Particle Wander**.



Fade in duration specifies the duration in milliseconds for fading in the affector. After this duration, the wandering will be in full effect. Setting this value can be useful to emit from a specific position or shape, otherwise wander will affect the position also at the beginning.

Fade out duration specifies the duration in milliseconds for fading out the affector. Setting this value can be useful to reduce the wander when the particle life time ends, for example when combined with an instance of the Attractor component so that the end positions will match the shape.

Global Wander Properties

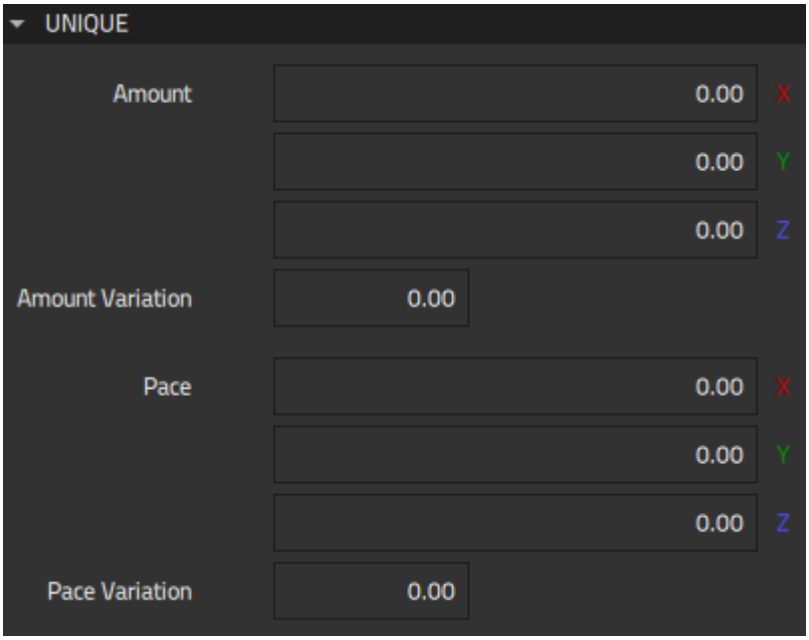
Specify global settings for **Wander** component instances in **Properties** > **Global**.

Amount specifies the distance that each particle moves at the ends of curves. For example, if you set the value of **X** to 100.00, **Y** to 10.00, and **Z** to 0.00, all particles wander between (100, 10, 0) and (-100, -10, 0).

Pace defines the frequency at which each particle wanders in curves per second, starting from **Pace start**. The meaningful range for pace start is between 0 .. 2 * PI.

Unique Wander Properties

Specify unique settings for the **Wander** component instances in **Properties** > **Unique**.

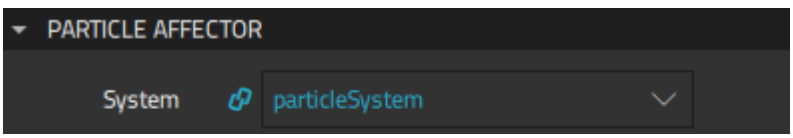


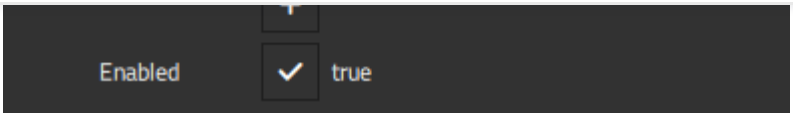
Amount specifies the distance that each particle moves at the ends of curves. Specify amount variation for each particle between 0.00 and 1.00 in **Amount variation**. When the amount variation is 0.00, all particles reach the maximum amount. When it is 0.50, every particle reaches between 0.50 and 1.50 of the amount. For example, if you set **Amount X** to 100.00, **Y** to 50.00, and **Z** to 20.00) and **Amount variation** to 0.10, the particles' maximum wave distances are something random between (110, 55, 22) and (90, 45, 18).

Pace defines the frequency at which each particle wanders in curves per second. Specify unique pace variation for each particle between 0.00 and 1.00 in **Pace variation**. When the variation is 0.00, all particles wander at the same frequency. For example, if you set **Pace X** to 1.00, **Y** to 2.00, and **Z** to 4.00 and **Pace variation** to 0.50, the particles' wave paces are something random between (2.00, 4.00, 8.00) and (0.50, 1.00, 2.00).

Particle Affector

Specify common settings for particle affectors in **Properties** > Particle Affector.





If the affector is not a direct child component of the particle system, select the **Particle System** component instance to affect in **System**.

To only affect some of the particles in the particle system, select them in **Particles**. Select + to add logical particles to the list.

Deselect **Enabled** to turn the affector off. Usually, this property is used in code to conditionally turn affectors off and on.

‹ Particle Emitters

Particle Directions ›