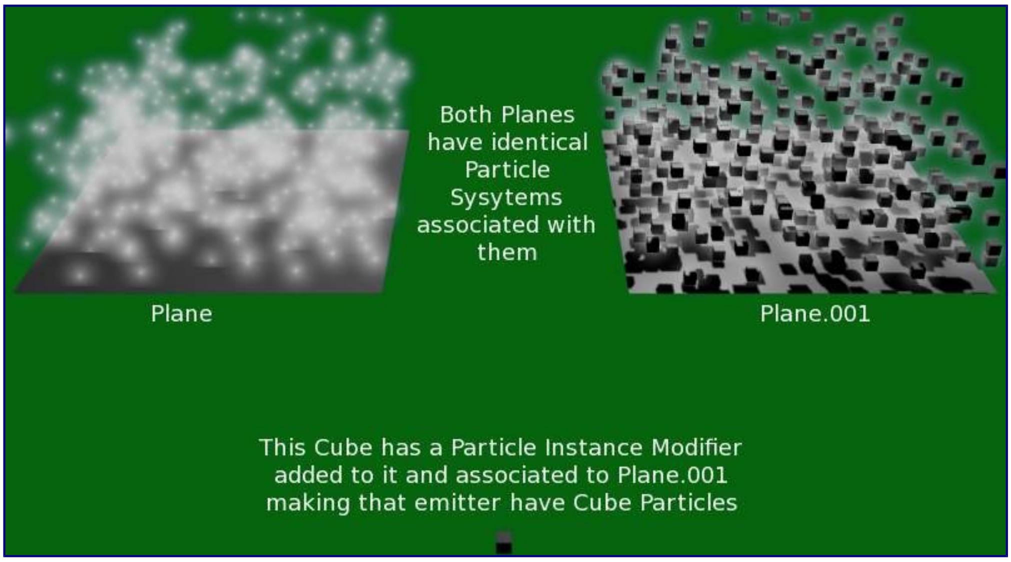
5.8.6.3 Modeling - Modifiers - Simulate - Particle Instance Modifier

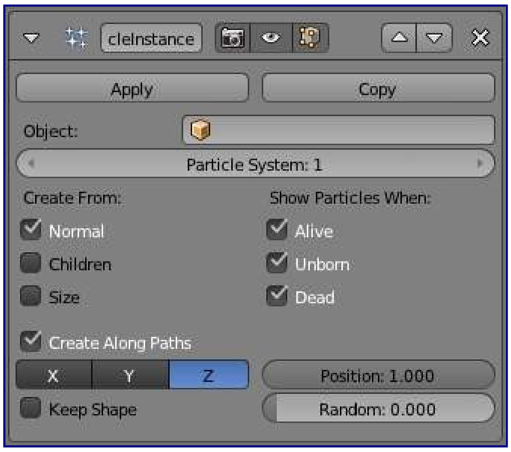
Particle Instance Modifier

When a *ParticleInstance* modifier is added to an object, that object will be used as a particle shape on an object which has a particle system associated with it. This means that to use this modifier you must also have another object which has a particle system on it, otherwise the *ParticleInstance* modifier will appear to do nothing.


Both Planes have identical Particle Sysytems associated with them
Plane
Plane.001
This Cube has a Particle Instance Modifier added to it and associated to Plane.001 making that emitter have Cube Particles

Particle system on left has no ParticleInstance modified object associated with it. The one on the right is associated with cube shown by using a ParticleInstance modifier on the cube.

Options


cleInstance

Apply | Copy

Object:

Particle System: 1

Create From:
- ☑ Normal
- ☐ Children
- ☐ Size

Show Particles When:
- ☑ Alive
- ☑ Unborn
- ☑ Dead

☑ Create Along Paths

X | Y | Z

Position: 1.000

☐ Keep Shape

Random: 0.000

Particle Instance Modifier

Because of the co-dependant way in which the *ParticleInstance* modifier is influenced by the underlying particle systems on other objects, some of the apparent effects generated by the *ParticleInstance* modifier can look and act vastly different, depending on the underlying settings of the particle systems it is associated with. This is worth taking account of if the *ParticleInstance* modifier settings don't appear to be giving the results expected, as it may indicate that the particle system settings may need altering rather than the *ParticleInstance* modifier settings.

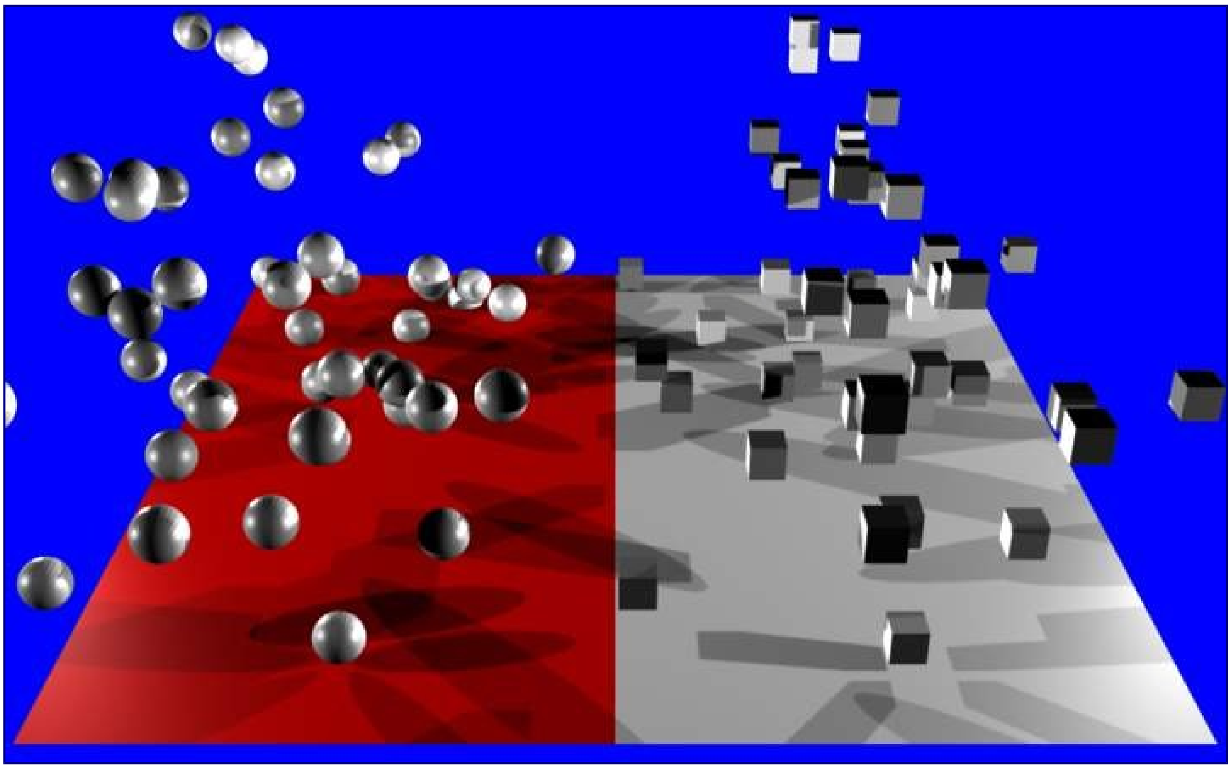
Object

The *Object* field, associates this *ParticleInstance* modifier with another object (usually an object having a particle system...). This indicates that when the object named in this field emits particles, those particles will have the mesh shape of the current *ParticleInstance* modifier's mesh. If for example a sphere has a *ParticleInstance* modifier added to it, when the *Object* field of this modifier is filled in with the name of an object that emits particles, those particle will be sphere shaped. Even though most of the time the *Object* field will have the name of an object with a particle system, this is not mandatory, you can enter an object's name which does not have a particle system, and it will be accepted by the *Object* field, as there do not appear to be any checks made to make sure the object's name entered into this field is "valid".

Particle System

The *Particle System* field is used to select which particle system number to apply the *ParticleInstance* modifier to, when the mesh which has the particle system on it has more than one of these. The *Particle System* field can have a value between `1` and `10`. It is possible to select any of the ten particle system numbers, however a check will **not** be made with the underlying particle emitting object specified previously in the *Object* field. If you select a particle system number which does not exist on the particle emitting object, then the particles on the emitting mesh will keep their normal particle shapes - no warning will be given that the chosen particle system does not exist on a particular particle emitting mesh.

As an example, below is a single plane mesh with two areas (the first area shown in red and the second in white), with different particle systems applied to each area. The left side using a *ParticleInstance* modifier which has the shape of a sphere and the right side having a *ParticleInstance* modifier which has the shape of a cube.



Render showing a single Plain mesh object assigned to two different vertex groups and each of those vertex groups is assigned a separate and independent particle system, with each particle system being assigned a different ParticleInstance modifier. In the case shown the ParticleInstance modifiers are a sphere and a cube. Example Blend file

Creation

Normal

When selected, the *Normal* button tells the *ParticleInstance* modifier to draw instances of itself wherever normal particle types are emitted from the underlying particle system. So if the current *ParticleInstance* modifier is a sphere shape, when normal particles are emitted they will be spheres.

Children

When selected, the *Children* button tells the *ParticleInstance* modifier to draw instances of itself wherever children/child particles are emitted/used on the underlying particle system. So if the current *ParticleInstance* modifier is a sphere shape, when children/child particles are emitted they will be spheres.

Size

Scale the instanced objects by the particle size attribute. When this is disabled, all the copies appear the same size as the origin.

Display

Unborn

When selected, the *Unborn* button tells the *ParticleInstance* modifier to draw instances of itself wherever unborn particles will be emitted/used on the underlying particle system. So if the current *ParticleInstance* modifier is a sphere shape, when unborn particles are present they will be spheres.

Alive

When selected, the *Alive* button tells the *ParticleInstance* modifier to draw instances of itself wherever alive particles will be emitted/used on the underlying particle system. So if the current *ParticleInstance* modifier is a sphere shape, when alive particles are present they will be spheres.

Dead

When selected, the *Dead* button tells the *ParticleInstance* modifier to draw instances of itself wherever dead particles will occur on the underlying particle system. So if the current *ParticleInstance* modifier is a sphere shape, when dead particles are present they will be spheres.

Using Paths

Create Along Paths

This option tries to make the underlying mesh object of the *Particle Instance* modifier deform its mesh shape in such a way as to try and match the path traveled by the particles/hair strands of the system associated with it. For example, below is a screen shot showing the path of a single keyed particle as it travels its way through each of the different way points `1` to `4` (target particle systems), when it reaches way point `4` the particle dies and ends its journey.

X,Y,X Rotation Axis

Specify which pole axis to use for the rotation.

Keep Shape

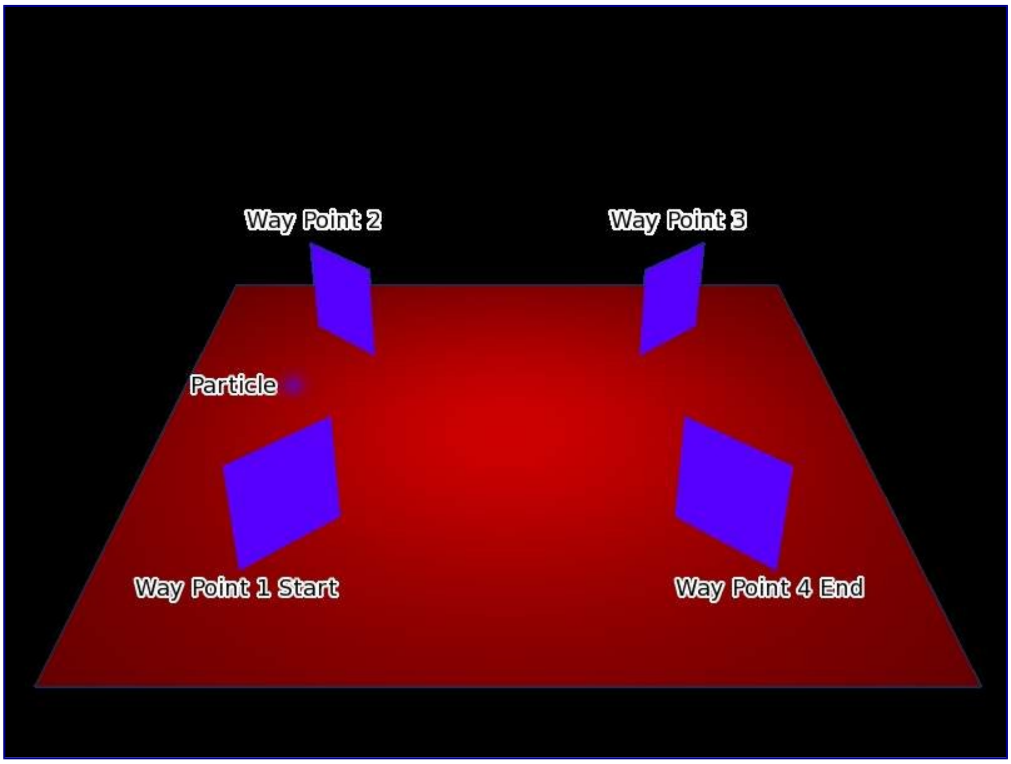
Enabling this prevents the object from being deformed. It instead simply aligns to the end of the path at the object’s center.

Position

Specify what percentage of the path the object fills. You could create a growing effect by animating this value over time.

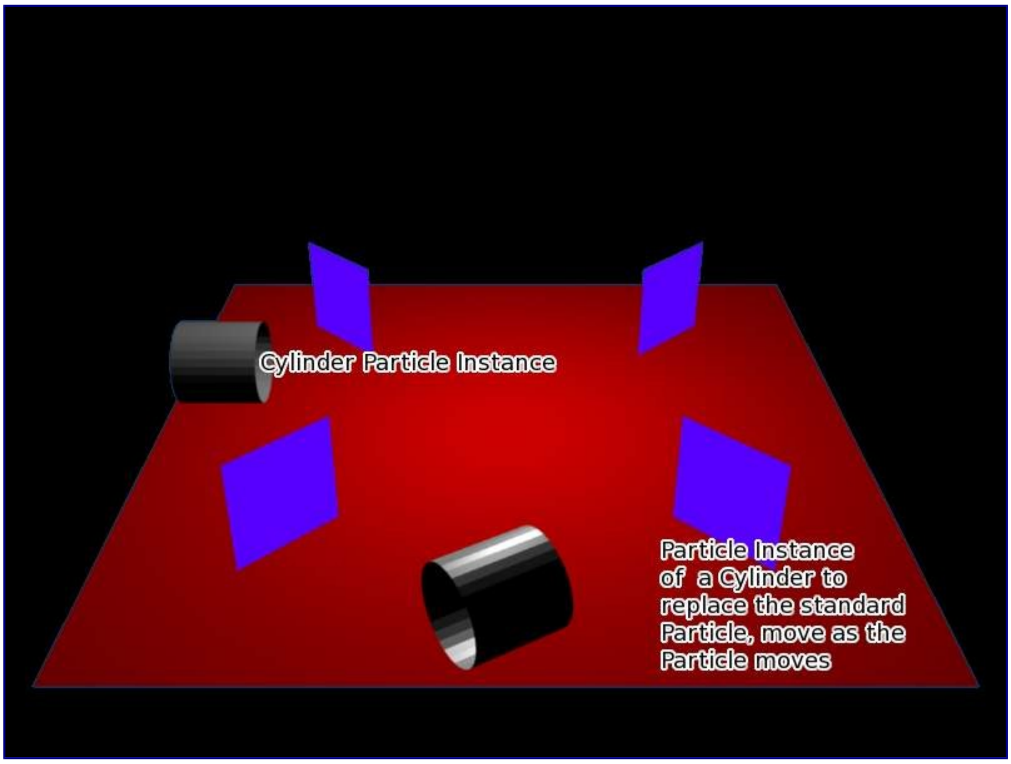
Random

Scales the position value of each instance a random value.



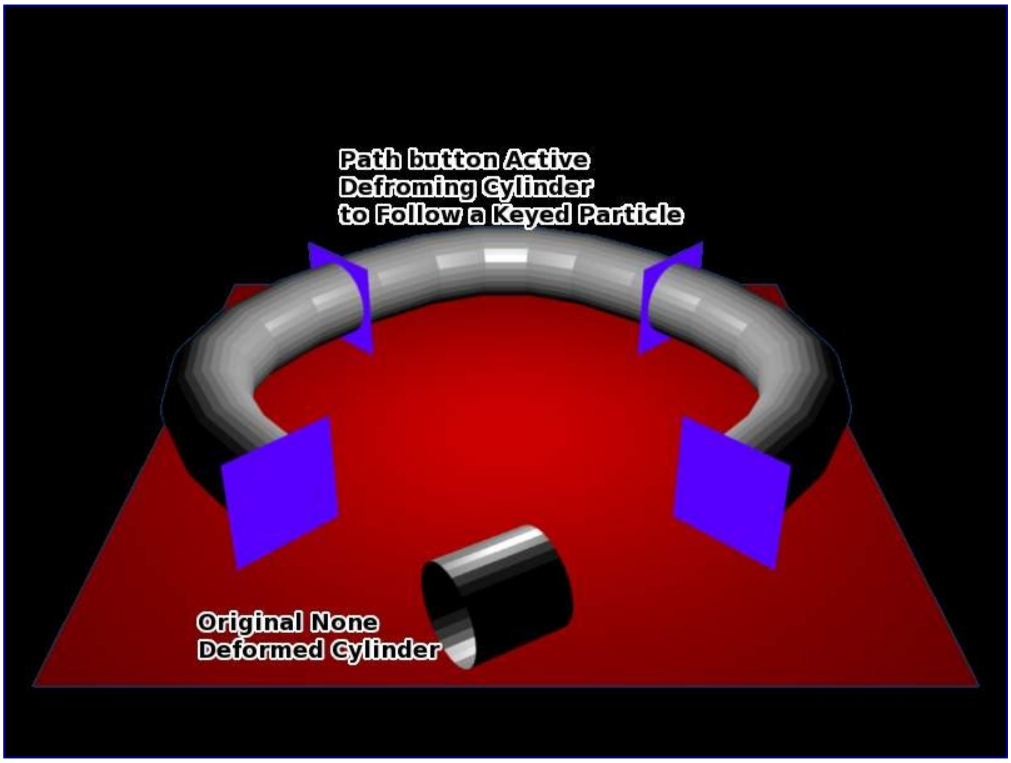
Keyed particle following way points (showing one particle). Example Blend file

When a *ParticleInstance* modifier is added to a cylinder object and then associated with the way point particle system, the particle position is copied by the cylinder and placed at the particles position. So the mesh object follows the location of the particle. The cylinder does not alter any of its other properties when following the particle, only the cylinders location gets altered, shape and rotation do not get altered. See screenshot below:


Cylinder Particle Instance
Particle Instance of a Cylinder to replace the standard Particle, move as the Particle moves

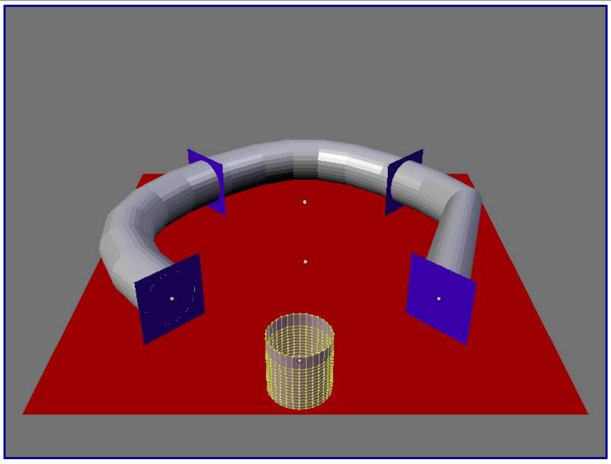
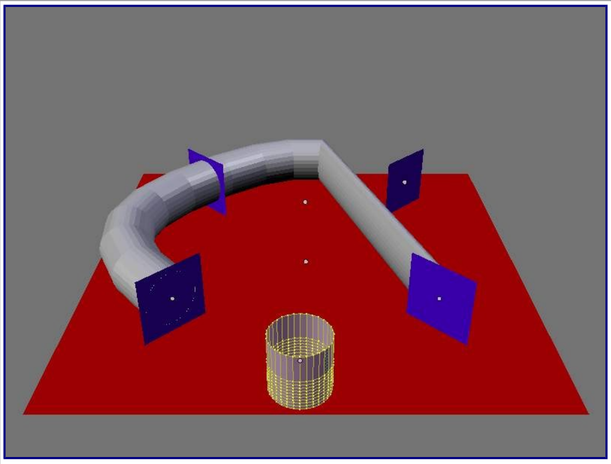
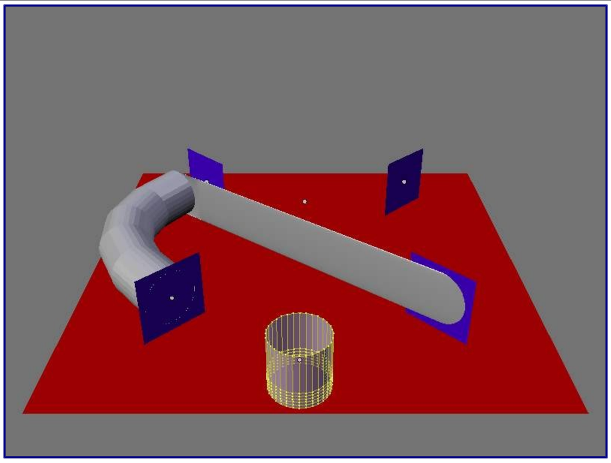
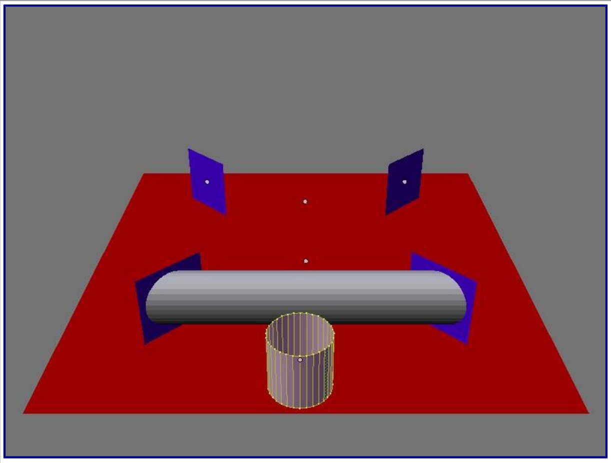
Keyed particle following way points showing a mesh object (ParticleInstance modifier) in place of the original particle. Example Blend file

Both of the above examples had the *ParticleInstance* modifier *Path* button deactivated. When the *Path* button is activated the effect can be seen in the screenshot below:

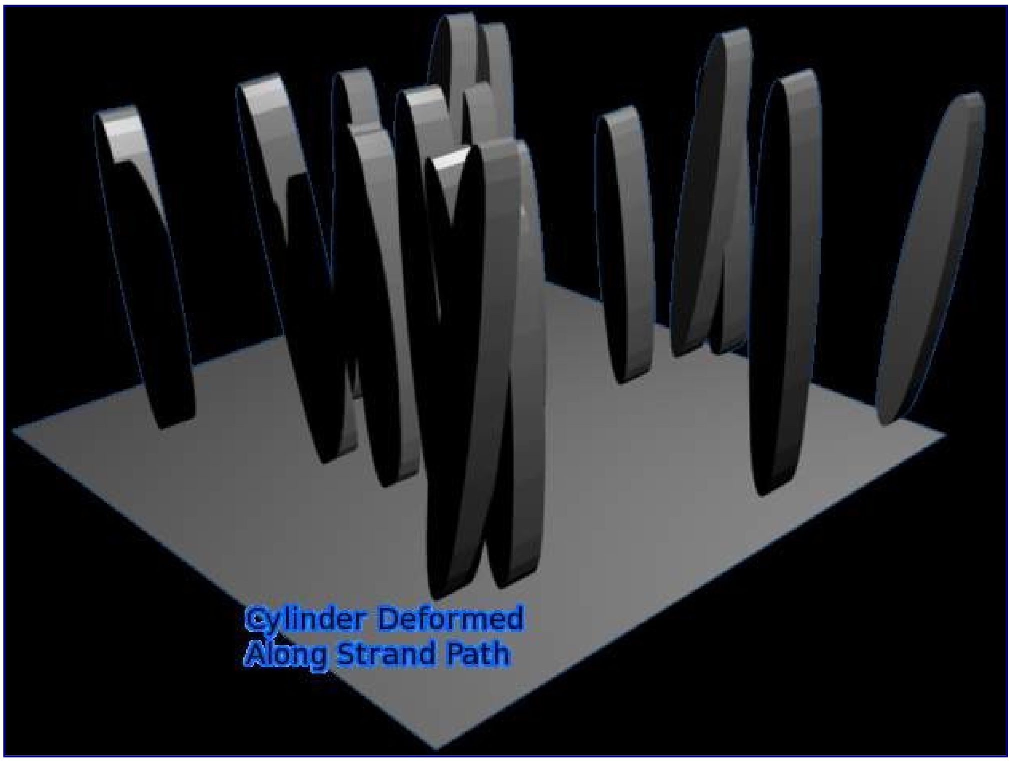

Path button Active Defroming Cylinder to Follow a Keyed Particle
Original None Deformed Cylinder

Keyed particle following way points showing a mesh object (ParticleInstance modifier) in place of the original particle, that is also being deformed to fit the travel path of the original particle. Example Blend file

Instead of the cylinder location just following the position of the particle (and not altering its shape), the cylinder tries to fit its mesh to the shape of the path followed by the particle. The mesh geometry of the object which is trying to deform can have an impact on how well the deformation is carried out. In the case of the cylinder, it has many loop cuts along its length so that it can bend at those points to deform along the particle path. For example here is the same scene with the number of loop cuts along the length of the cylinder reduced, showing the effect on the deformation of the cylinder along the particle path.

 The cylinder has most of its edge loops so most of the path deform is very regular apart from at the very end of the curve.	 The cylinder has some of its edge loops removed so the path of the deform starts to become less regular.
 Now the deform path is very rough.	 At this point there aren’t any vertices to bend the cylinder to follow the path, and instead the cylinder just goes directly to the last way point 4.

Once all the extra edge loops around cylinder are removed so that there is only the top and bottom vertices left, meaning that the cylinder doesn’t have enough geometry to bend, in that case it cannot follow the path of the particle, so it just goes from the start way point `1` to the ending way point `4`. The *ParticleInstance* modifier *Path* button works for hair (strand) particles as well as with keyed particles. In this case the mesh of the *ParticleInstance* modifier will follow the length and profile of the hair strands paths. Below is a screenshot showing the effect of the *Path* button on hair:



Strand with a ParticleInstance modifier associated with it and deforming the cylinder along the hair profile. Example Blend file

Note

Strands when they are generated instantly die when created so for the *Path* button to be of any use, you must also have the *Dead* button activated. Otherwise the path a mesh took will not be visible!

See also

Particles