

Tornado With Lattice

Dark Scarab Tutorials -- Blender 2.5

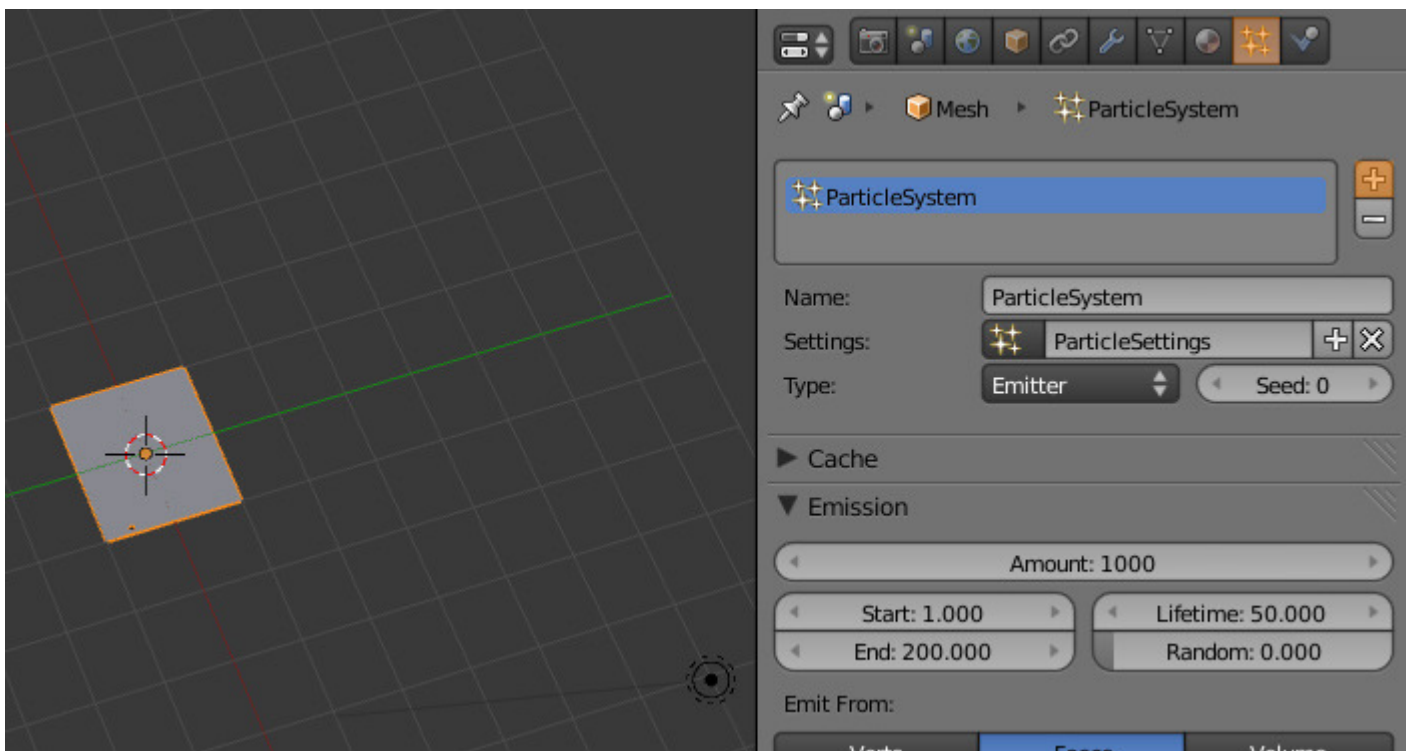
NOTE: In this tutorial, just like nearly all of my tutorials, I have provided what I call keystrokes lines. These are highlighted throughout the tutorial and are meant to allow you to see the actual keystrokes that I went through in order to get the results I get in the tutorial. More advanced users should be able to go through a tutorial without the keystrokes lines assuming I have explained myself sufficiently.

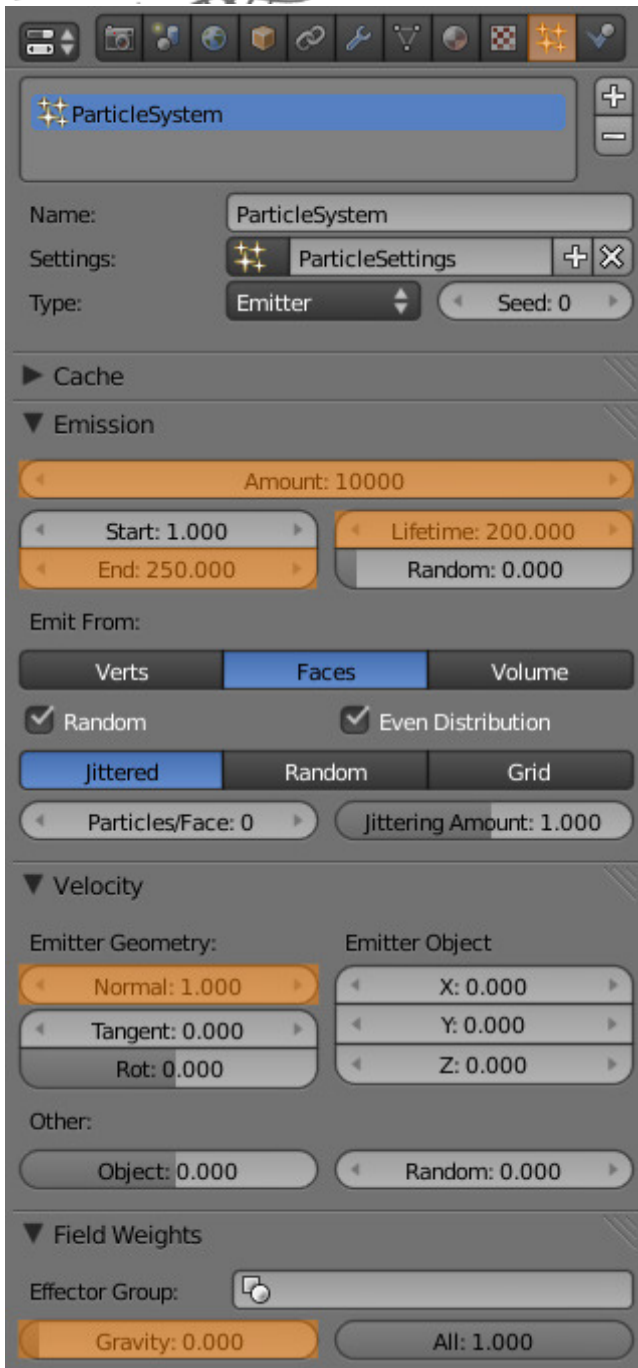
A while back someone had asked how to make a tornado using particles, similar to the way that I had created the clouds. At that time I did not know about Lattice and how much more control you can have over particles. With me being the particle lover I am, I decided to try out making a tornado as asked and I believe I got great results.

First off, I want to let you know exactly what a lattice is and what it does. The first use for this is to deform meshes without physically changing the base mesh. This allows you to revert back to the original easily if you have to. The second use that I know of is to use the lattice to control the general motion of particles. This is what we are going to be using it for in this case with our tornado. When we apply the lattice to the emitter, the particle will generally follow the shape of the lattice.

Enough with the explaining, let's open up Blender and get rid of the default cube. To make a basic tornado, all we need to do is add two objects: the emitter and the lattice. So, let's start with the emitter and go from there. Add a plane to our scene. Now we want to go to the particles settings and click on the plus button to add a particle system to the plane.

Add-->Mesh-->Plane, Go to Particle Settings, Click the Plus Button

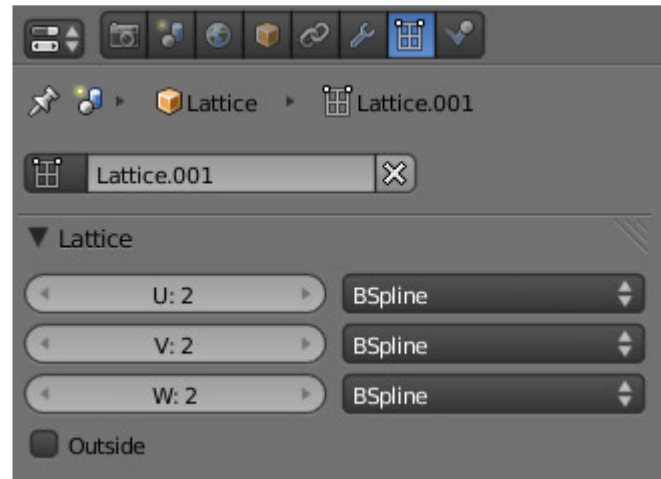




Here is the run down for all of the settings for our particle system. In the Emission section change Amount to 10000, End to 250.000, and Lifetime to 200.000. Then in the Velocity section change Normal to 1.000. Lastly we need to go into the Field Weights section and change Gravity to Zero. That should do it for the particle system. If you are having a hard time finding all of the settings you can find them in the image to the right.

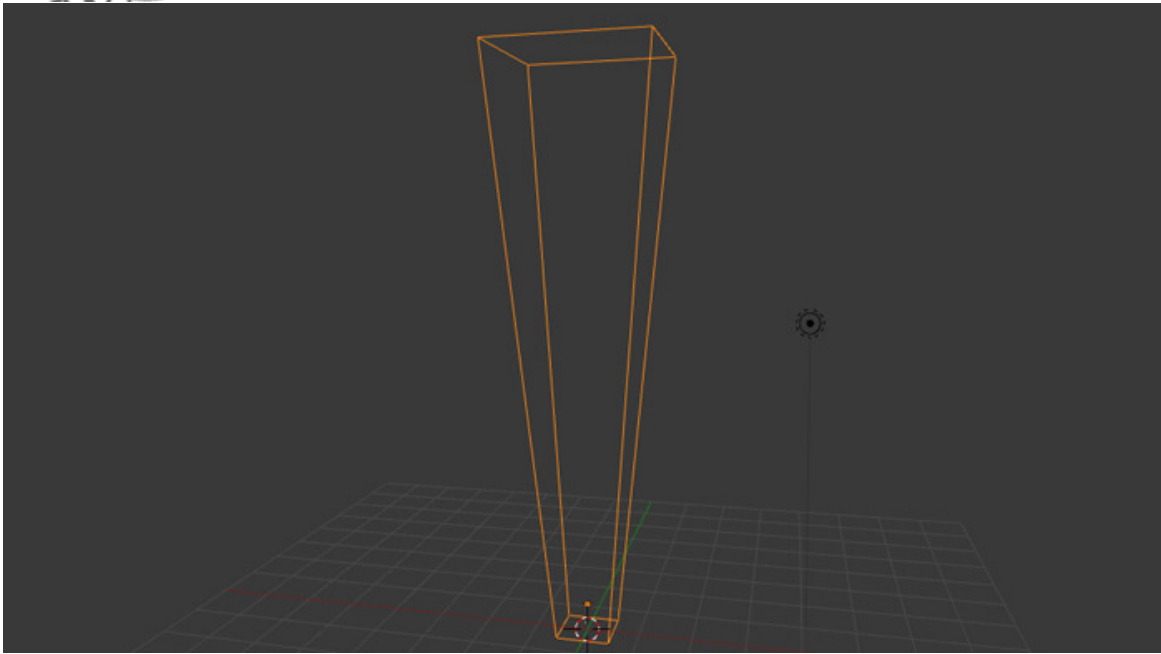
- Emission Section: Change Amount to 10000, End to 250.000, Lifetime to 200.000**
- Velocity Section: Change Normal to 1.000**
- Field Weights Section: Change Gravity to 0.000**

Now we need to add the lattice to our scene. You should be able to find it under the Add menu, however, it is not specifically labeled as Lattice but as 'Add Object'. It should be the one right below the Armature option. When it is added to the scene it should look like a cube the only difference being that the lattice only has edges and no faces. With the lattice there are also special settings to go along with it. All of its special options are in the Object Data settings on the right hand panel. It should look something like this:



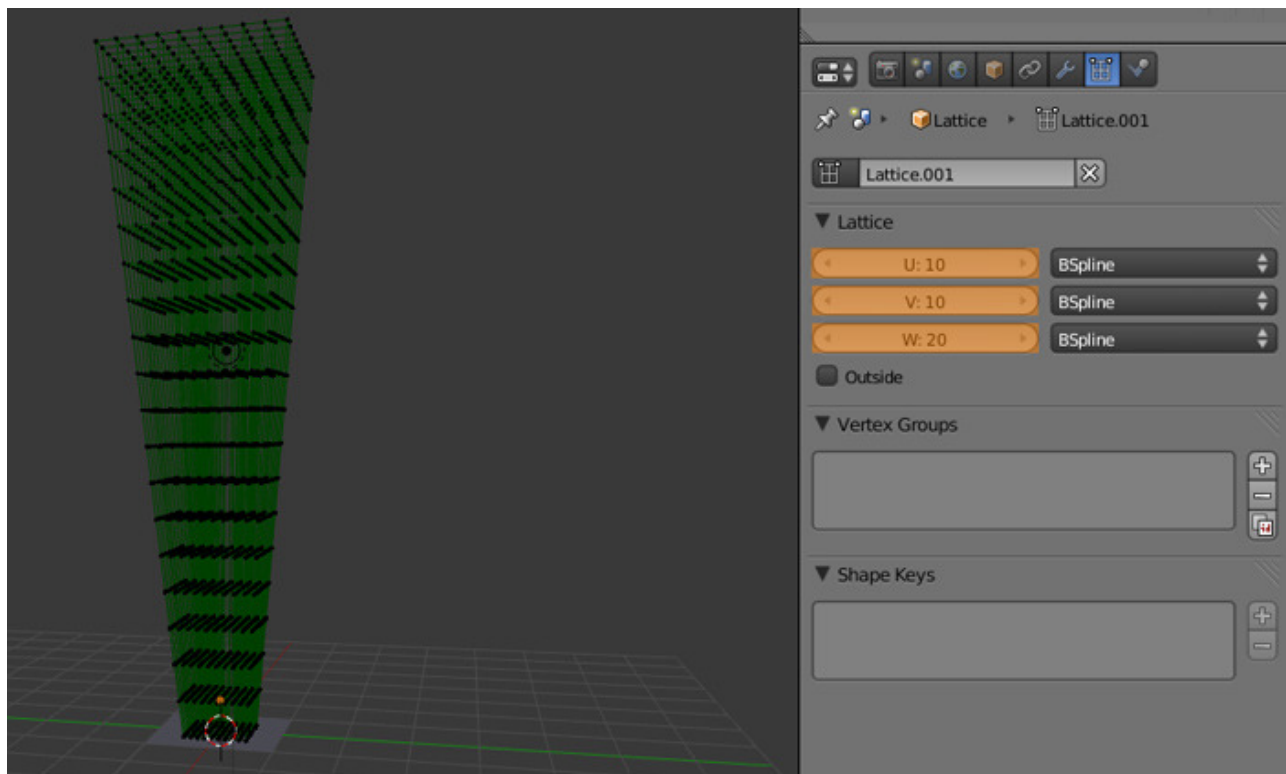
Before we do anything with these settings we need to get our cube into the general shape of the tornado. First, grab the lattice a move it up along the Z axis by 0.5. This is make the bottom line up with the emitter. Now go into edit mode and select the top four vertices. Grab those and move them along the Z axis by 10. Lastly, with those same vertices, scale them up by 3. At this point we have the small base and wide top that we need for our tornado.

Select the lattice, G, Z, 0.5, Edit Mode, Select the top 4 vertices, G, Z, 10, S, 3



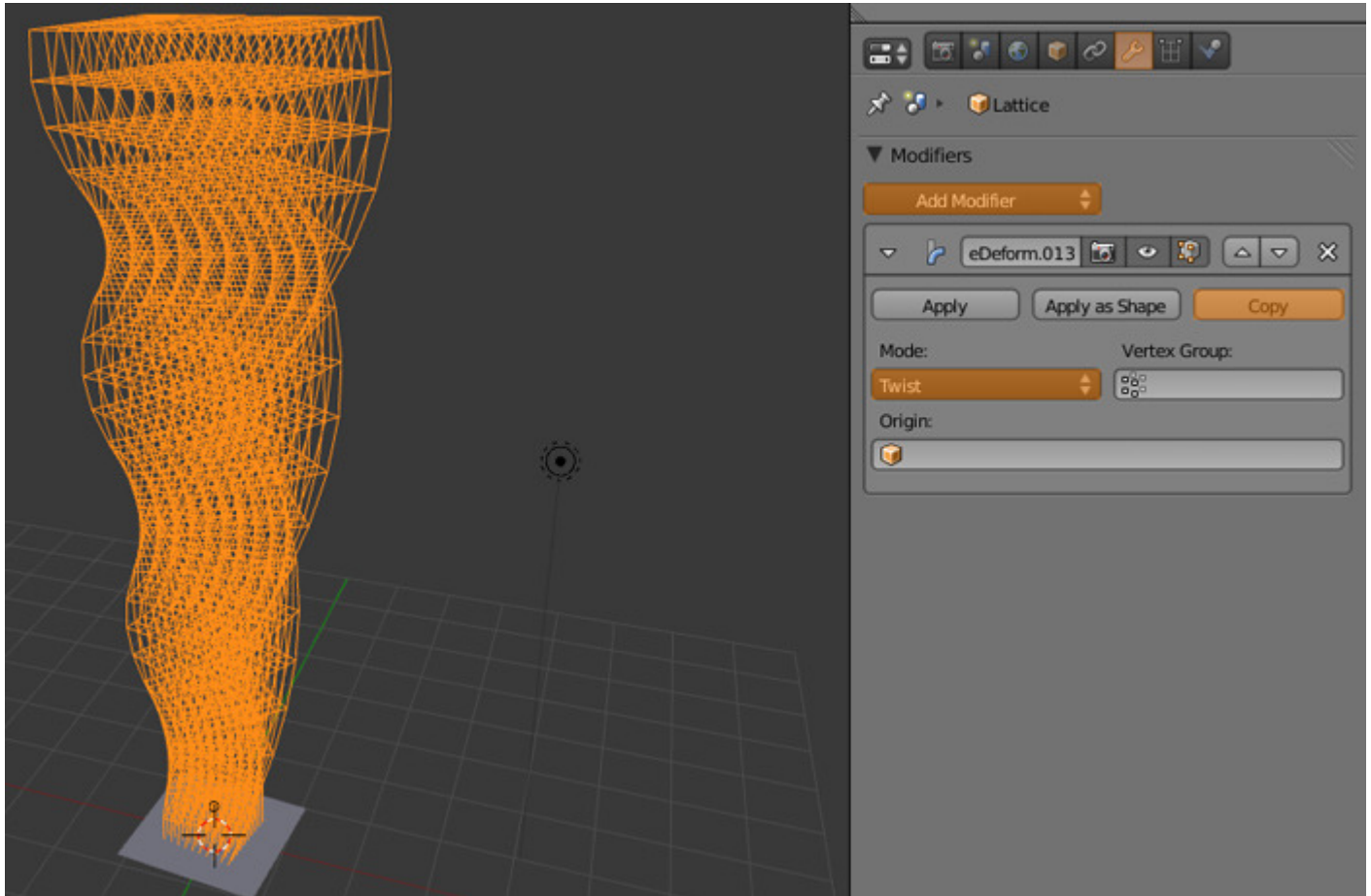
The next bit is to give the lattice a twisting shape to make the particles twist around. To do that we need more vertices to edit, however, we cannot add more vertices by subdividing like we would do to any mesh. What we need to do is go to the Object Data settings (the settings from the image I showed earlier). You should be able to see the U, V, and W settings. These determine the number of vertices that are on the lattice in each direction. U is the same as X, V as Y, and W as Z. I am going to change U to 10, V to 10, and W to 20.

Go to Object Data settings, Change U to 10, Change V to 10, Change W to 20



We can finally start shaping our twister. To make it twist is actually quite easy. All we need to do is go to the Modifiers Panel and in the 'Add Modifier' pop-out select Simple Deform. When that pops up, under Mode, select Twist. At this time (Blender Version 2.5 Alpha 0) there are no settings to make it twist more or less than default. But what we can do is click on the copy button a bunch of times. I don't even know how many times I clicked, so just click it until you think your lattice is twisted enough.

Go to Modifier Settings, Add Simple Deform Modifier, Change Mode to Twist, Click Copy a bunch



Finally we can link our lattice to the emitter so that the particles will follow the shape of the lattice. Select the plane that is acting as our particle emitter and then go to the modifier settings panel. Click on the Add Modifier pop-out and choose Lattice. When that appears click on the object field and in the dropdown select the name of the lattice (probably just Lattice). You may see the plane twist to match the bottom of the lattice.

Select the emitter, Go to the Modifiers settings panel, Add Lattice Modifier, Choose the Lattice name as the object

That is all there is to setting it up. Go ahead and test it out by clicking the play button in the timeline at the bottom. Your particles should twist around with the lattice as they go up into the air. Now you can add materials to your particles to make it look more like a tornado. Basically, I used a halo material with a cloud texture attached to it in the image below. In that image, I admit, it does look like much, but when animated I think it looks really good.

