Blender Visualization Tutorial SS2013 IV

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Forum:
http://www.cellvisualization.org

Direct link to this forum entry:
http://www.cellmicrocosmos.org/Cmforum/viewtopic.php?f=50&t=724

Actual Version of Blender:
http://www.blender.org

Here, Blender 2.67b is used.

Target

This tutorial describes how to create grass which is moved by wind.

Abbreviation

RMB Right Mouse Button

LMB Left Mouse Button

! For using most of the shortcuts discussed in this tutorial, you have to be sure that the mouse cursor is WITHIN the view port of the 3D View !

Base

As base use e.g.

→ ct_Rochen__3_9_stereo_red_cyan_circle.blend

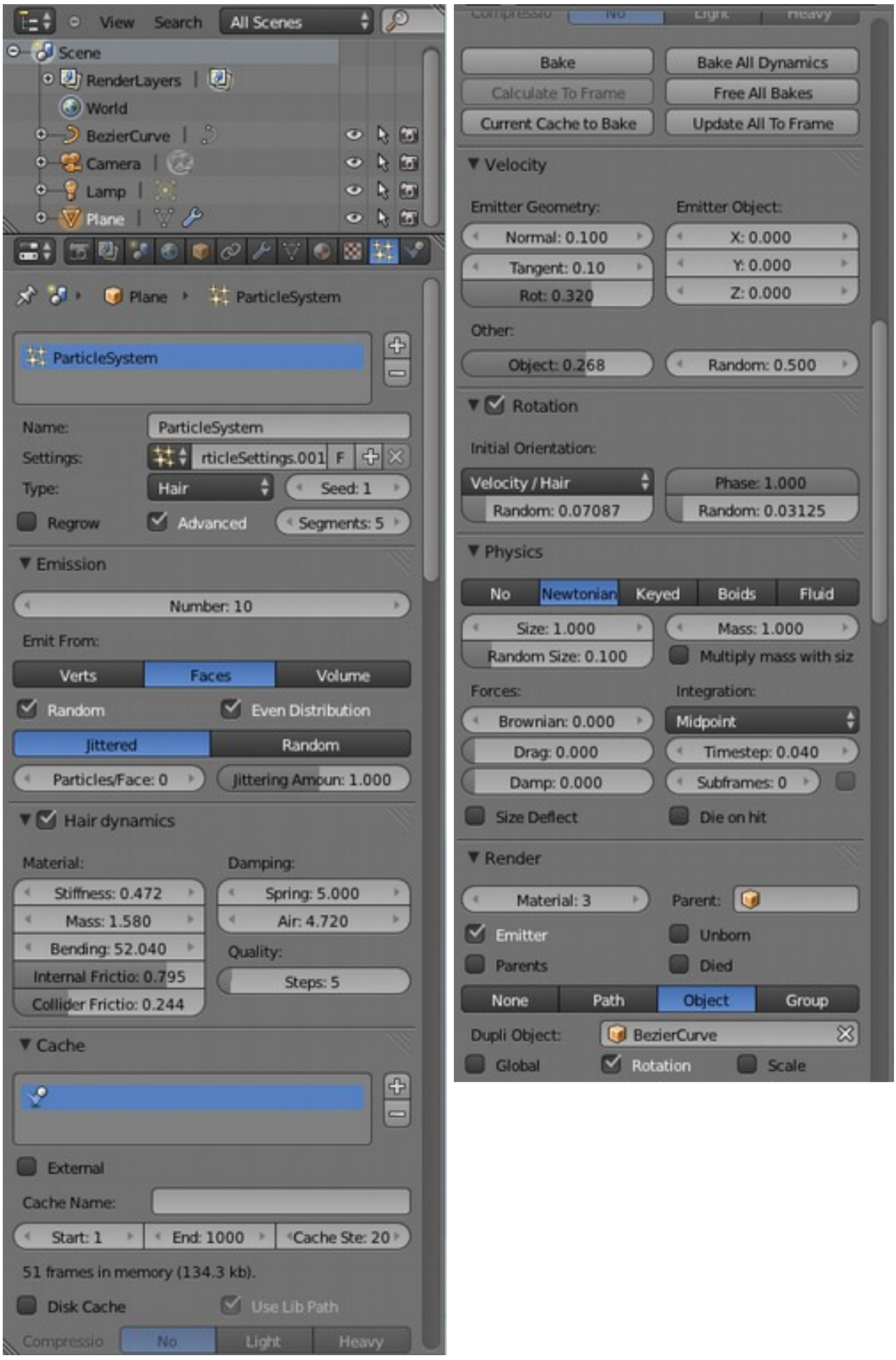
found in the example files of the previous tutorial:

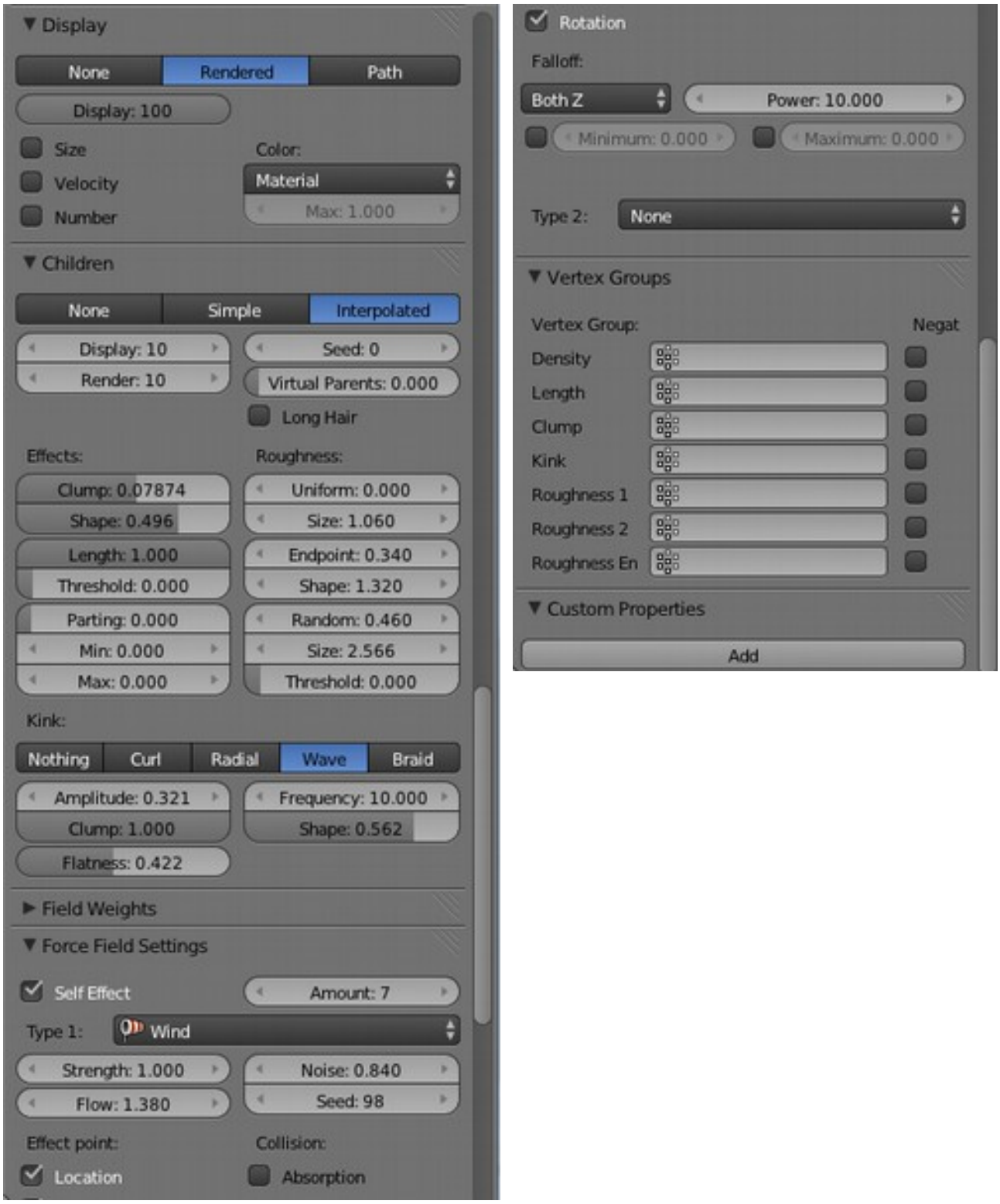
http://www.cellmicrocosmos.org/Cmforum/viewtopic.php?f=50&t=723

Create a plane: Add → Mesh → Plane

Subdivide this base pane into 2 times in Edit Mode

Add a Particle System:

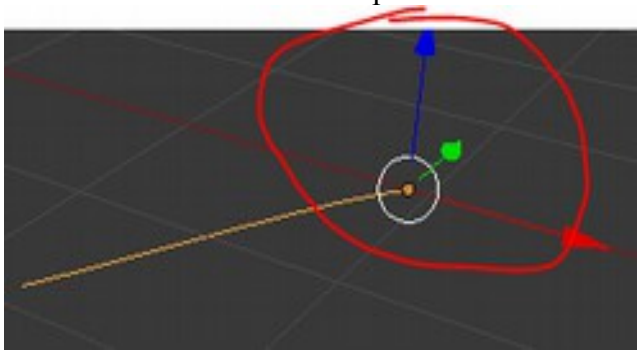

View
Search
All Scenes
Scene
RenderLayers
World
BezierCurve
Camera
Lamp
Plane
Plane
ParticleSystem
ParticleSystem
Name:
ParticleSystem
Settings:
rticleSettings.001
F
Type:
Hair
Seed: 1
Regrow
Advanced
Segments: 5
Emission
Number: 10
Emit From:
Verts
Faces
Volume
Random
Even Distribution
Jittered
Random
Particles/Face: 0
Jittering Amoun: 1.000
Hair dynamics
Material:
Stiffness: 0.472
Mass: 1.580
Bending: 52.040
Internal Frictio: 0.795
Collider Frictio: 0.244
Damping:
Spring: 5.000
Air: 4.720
Quality:
Steps: 5
Cache
External
Cache Name:
Start: 1
End: 1000
Cache Ste: 20
51 frames in memory (134.3 kb).
Disk Cache
Use Lib Path
Compressio
No
Light
Heavy
Bake
Bake All Dynamics
Calculate To Frame
Free All Bakes
Current Cache to Bake
Update All To Frame
Velocity
Emitter Geometry:
Normal: 0.100
Tangent: 0.10
Rot: 0.320
Emitter Object:
X: 0.000
Y: 0.000
Z: 0.000
Other:
Object: 0.268
Random: 0.500
Rotation
Initial Orientation:
Velocity / Hair
Random: 0.07087
Phase: 1.000
Random: 0.03125
Physics
No
Newtonian
Keyed
Boids
Fluid
Size: 1.000
Random Size: 0.100
Mass: 1.000
Multiply mass with siz
Forces:
Brownian: 0.000
Drag: 0.000
Damp: 0.000
Integration:
Midpoint
Timestep: 0.040
Subframes: 0
Size Deflect
Die on hit
Render
Material: 3
Parent:
Emitter
Unborn
Parents
Died
None
Path
Object
Group
Dupli Object:
BezierCurve
Global
Rotation
Scale



In this images, there is already a Grass Blade added. Create it this way:

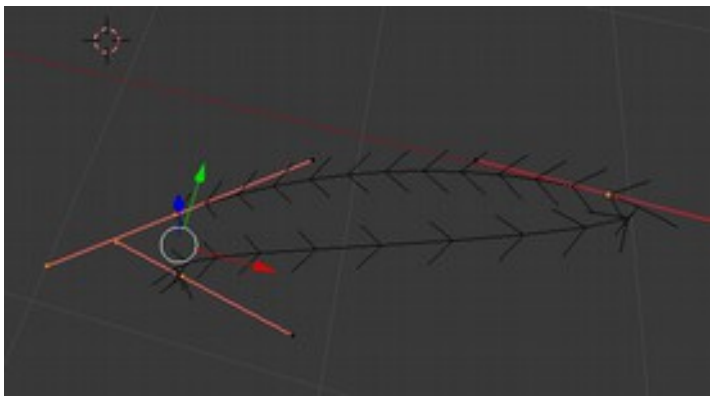
Add → Curve → Bezier

Make sure that the Origin of the Bezier Curve is add the bottom of the object. In the beginning, this is not the case. Use for example the 3D Cursor to reposition the Origin



Now go to edit mode and add a second strand by using “e” for extrude

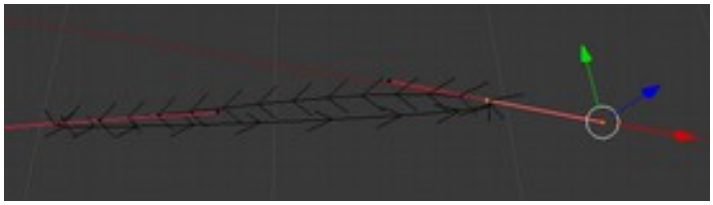
The two lines are not connected, for this purpose, just select the last two nodes



and then connect then by using “Make Segment”, just press f

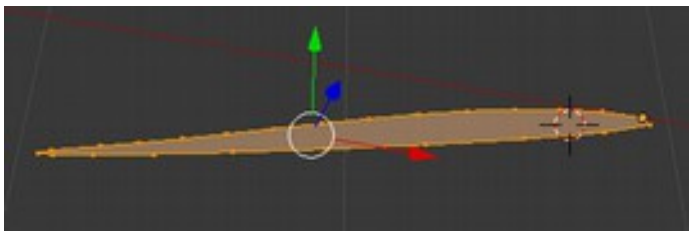
They are now connected, now you can delete the new generated connecting node, the two lines will still be connected afterwards

Adjust now the Bezier curve to create a nice grass blade



Because we want to have a surface on our grass blade, we have to convert it to Mesh; use ALT+C for example for this pupose.

Go back to edit mode, select all points and create a face by pressing f again

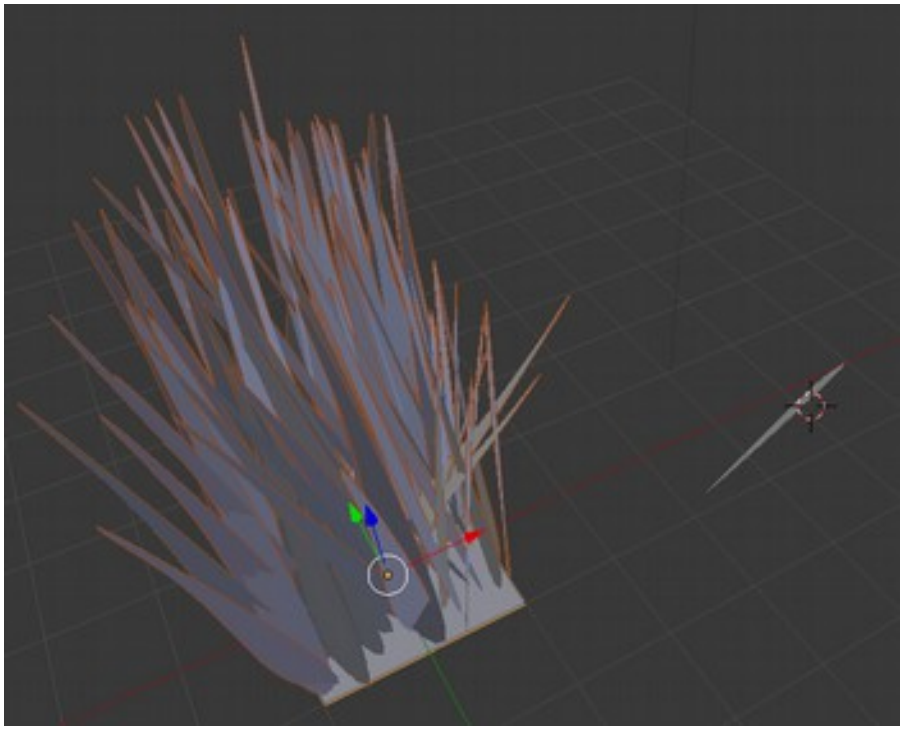


Finally, make sure that the Origin is still in the right position!

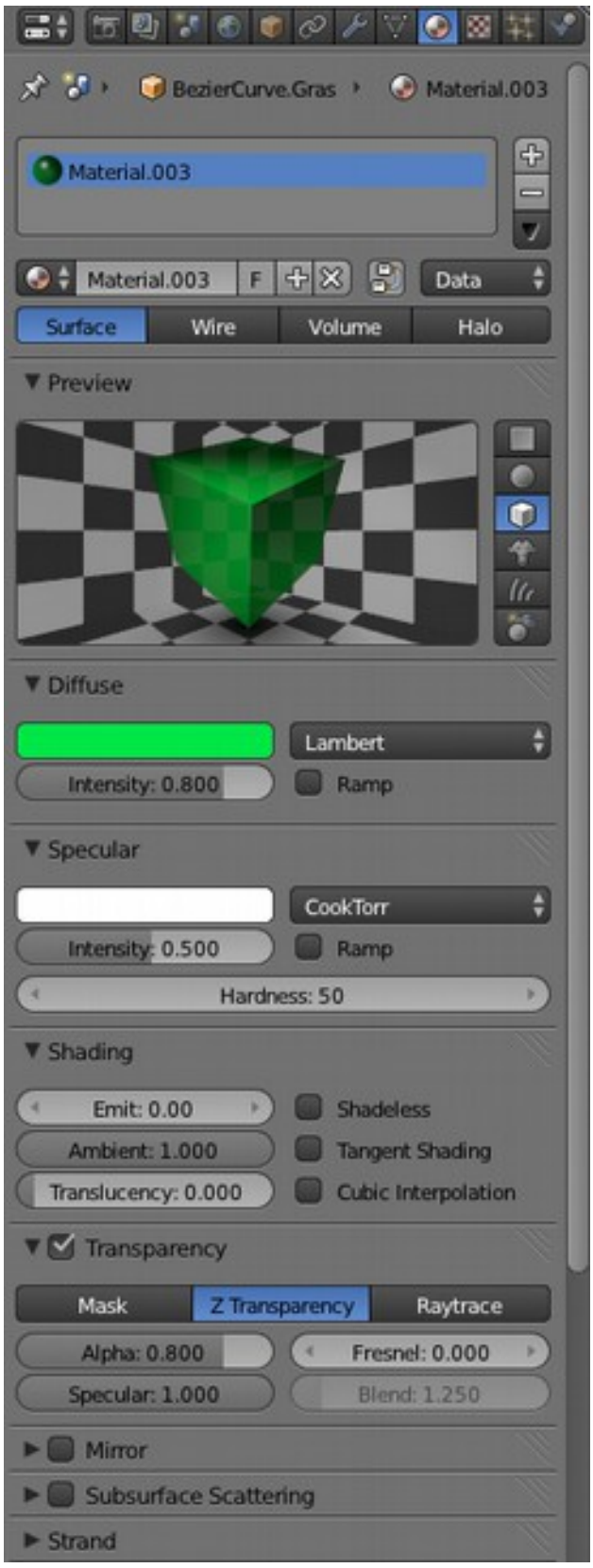
If you change now the rotation of this blade, the rotation also of the blades on the plane will change

Make sure that in the Particle System the BezierCurve is chosen (your grass blade) and the Rotation is selected

The result should look like this:

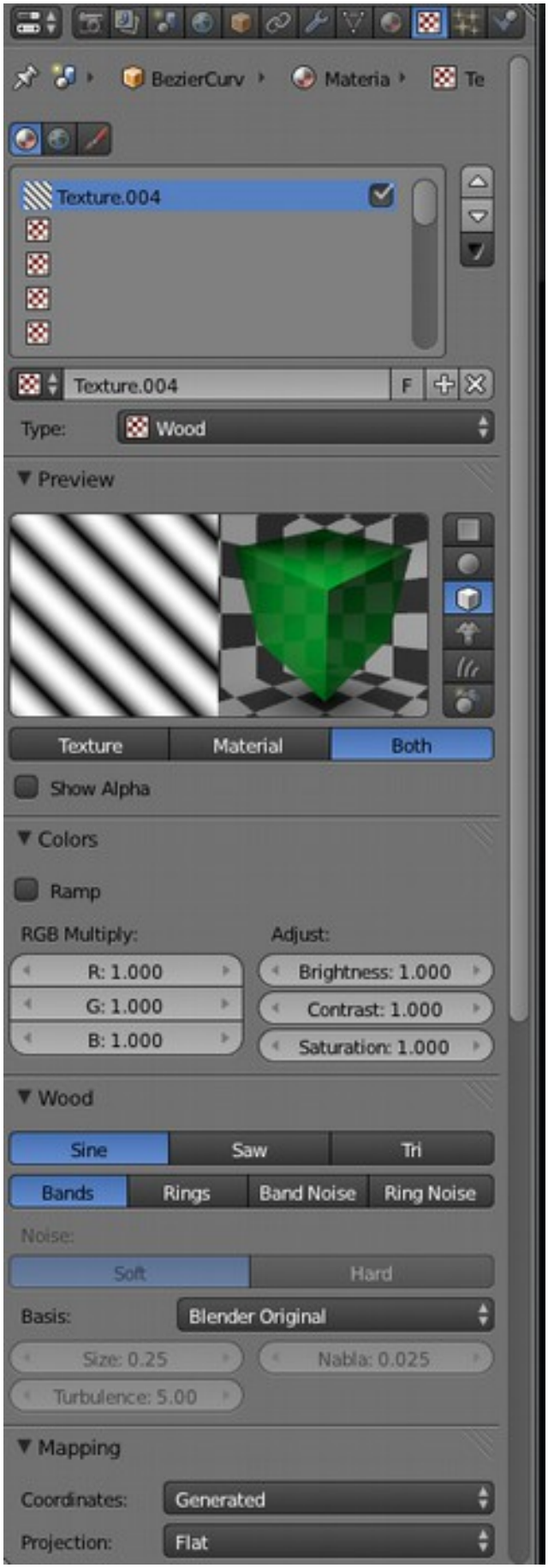


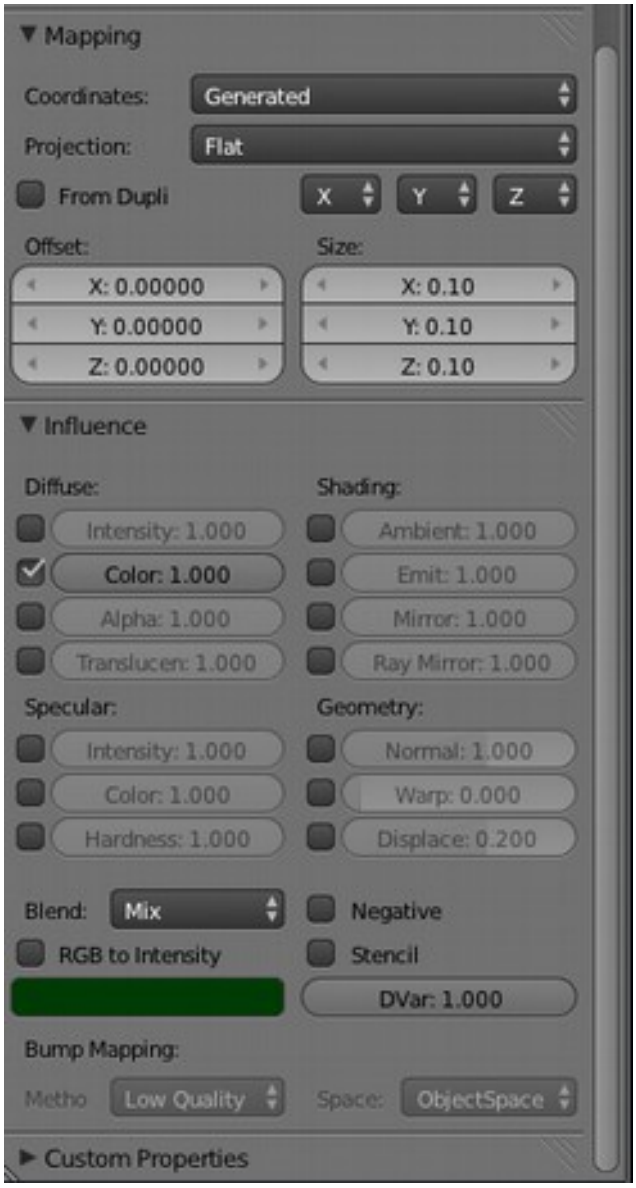
The grass is gray, this is not so nice. So let us change it. Select the grass blade and create a nice material, e.g.:


BezierCurve.Gras
Material.003
Material.003
Material.003
F
Data
Surface
Wire
Volume
Halo
Preview
Diffuse
Lambert
Intensity: 0.800
Ramp
Specular
CookTorr
Intensity: 0.500
Ramp
Hardness: 50
Shading
Emit: 0.00
Shadeless
Ambient: 1.000
Tangent Shading
Translucency: 0.000
Cubic Interpolation
Transparency
Mask
Z Transparency
Raytrace
Alpha: 0.800
Fresnel: 0.000
Specular: 1.000
Blend: 1.250
Mirror
Subsurface Scattering
Strand

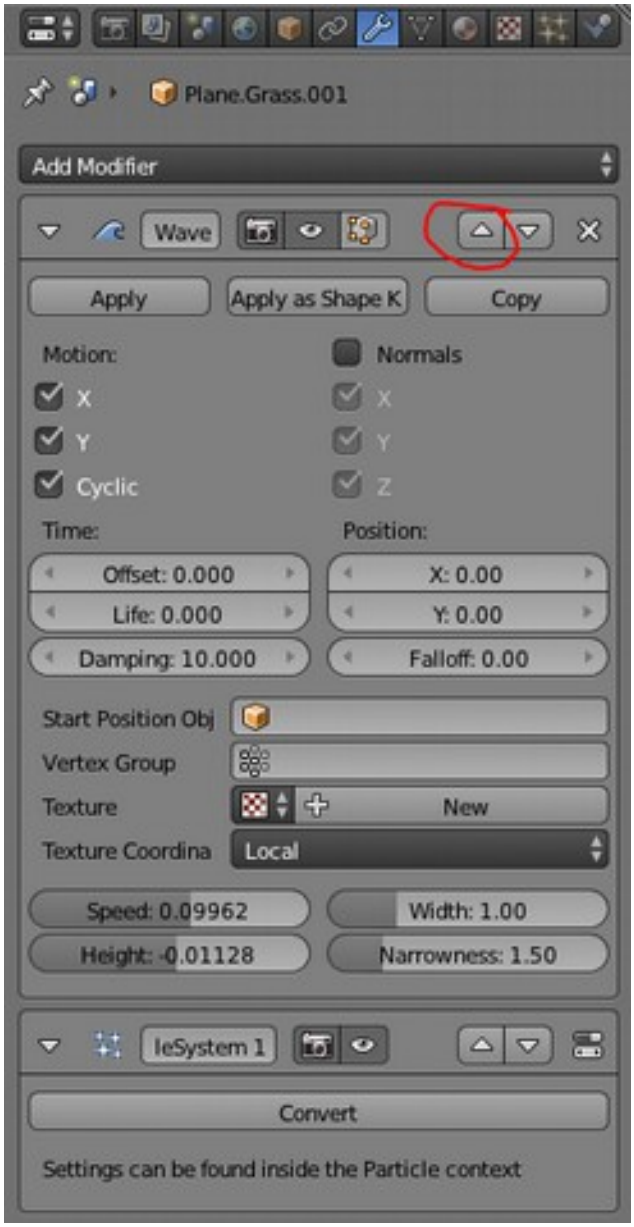

Options
Traceable
Full Oversampling
Sky
Use Mist
Invert Z Depth
Z Offset: 0.000
Light Group:
Exclusi
Local
Face Textures
Face Textures Alpha
Vertex Color Paint
Vertex Color Light
Object Color
UV Project
Pass Index: 0
Shadow
Receive
Receive Transparent
Cast Only
Casting Alpha: 1.000
Shadows Only
Shadow and Distance
Cast Buffer Shadows
Buffer Bias: 10.000
Auto Ray Bias
Ray Bias: 0.000
Cast Approximate
Custom Properties

And a texture:



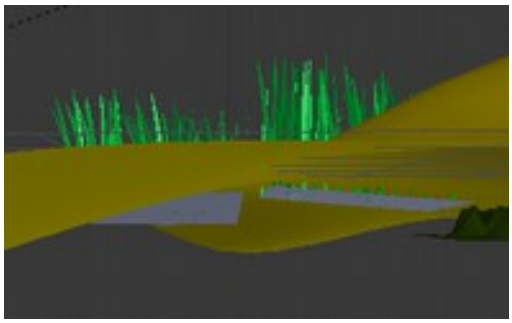


But still there is a problem: if you start the animation, the grass starts to move very fast, but then, after ca. 100 frames, it moves smoothly, just like it should be. But a few frames later, the movement stops. To keep the grass moving, we will just add a wave modifier to the plane:



You can see here that the Wave modifier must be on top of the ParticleSystem which initiates the movement. Please press the arrow up besides the header of the Wave modifier to move it one layer up. Play around with the values, use the ones you can see here or change them.

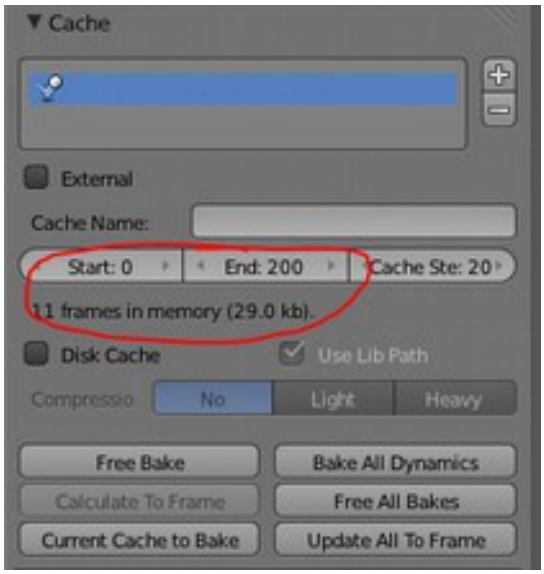
Finally, place the plane with the grass blades underneath the ground of your environment:



You should be able to see the grass blades, but the plane should be hidden. You can also duplicate the grass plane (see image), but it may be that you have to bake the simulation again.

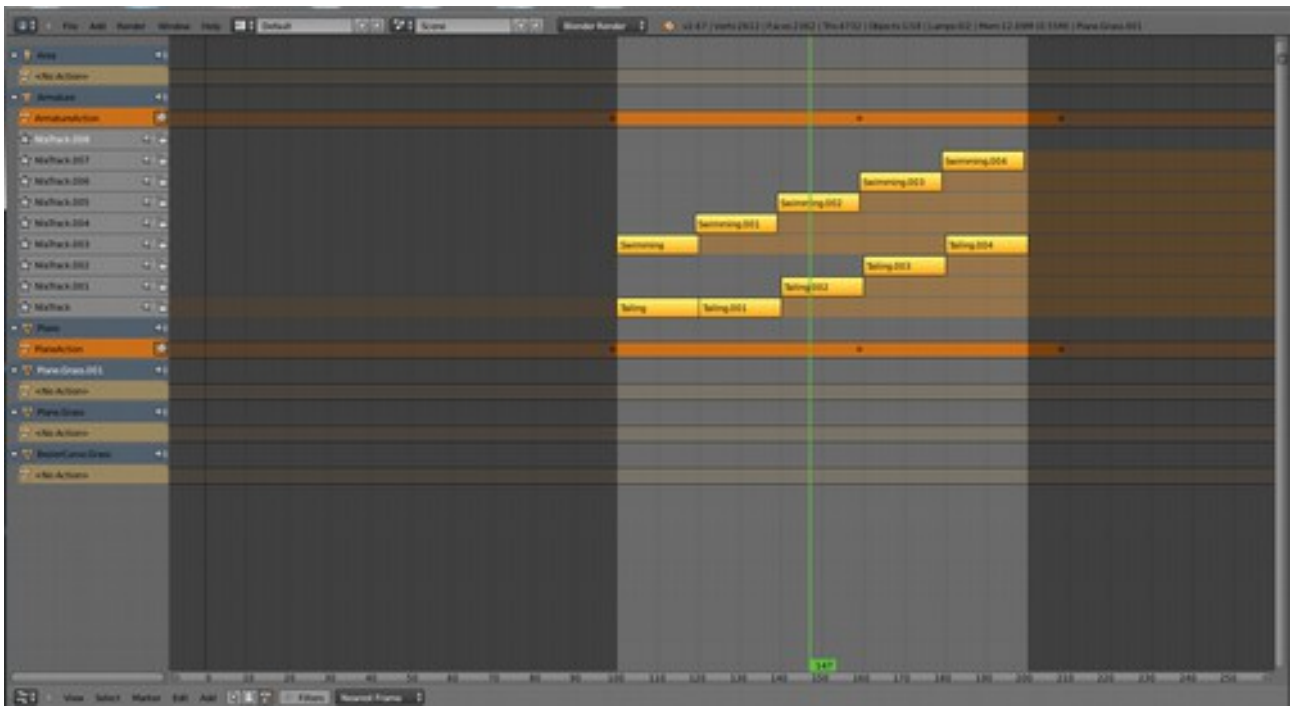
But now, there is still a problem left: the grass starts to move very fast at the beginning and after ca, 100 frames it moves perfectly smooth. But the animation of the manta ray starts already earlier.

The solution to this problem is simple: the animation of the grass in our example should run from 0 to 200. The first 100 frames are needed to “equilibrate” it, to bring it to the correct position and motion. The frames 101 to 200 then are used for the animation.

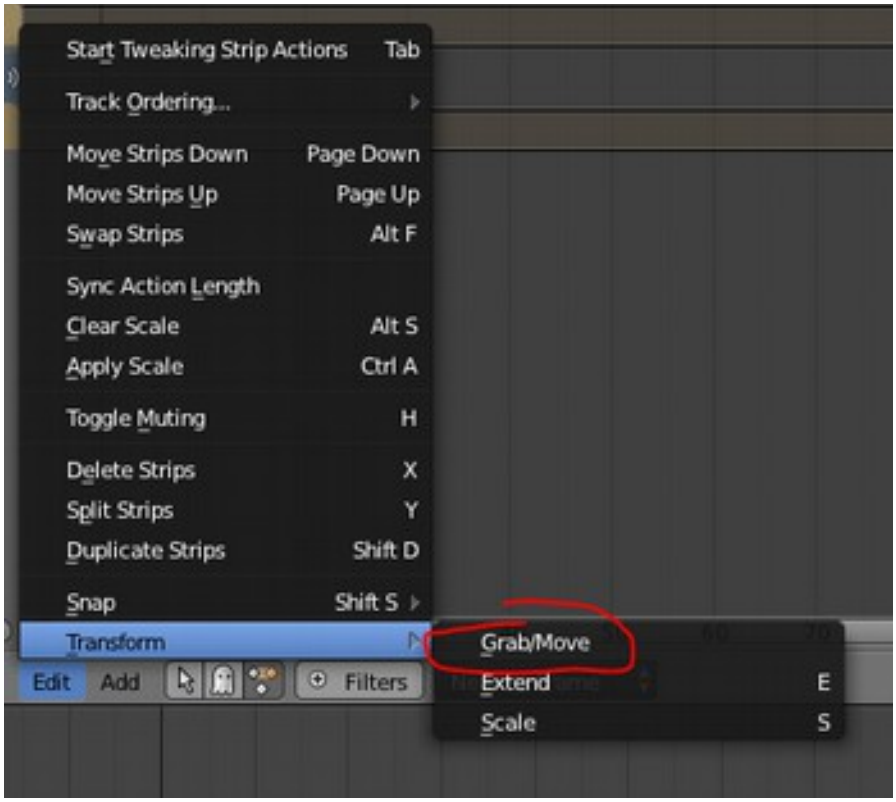


Now the animation has to be shifted.

First, shift the animations in the NLA Editor to 100



Make sure that all tracks are selected (if they are not selected, press A) and then select from the menu Edit → Transform → Grab/Move



And then move it to frame 100 (finish the move with LMB).

The same has to be done with the movement animation of the manta ray. Select the manta ray and go to the Dope Sheet

Select each frame with RLM and move it by 100 frames:

Done.