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# Schwurve

*Release 0.9*

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**Schwurve** is a Blender addon (v 3.3 or above) created using Serpens 3 that provides tools and automated workflows for adding physics simulations to curves, meshes, and geometry nodes systems.

Check out the [Usage](#) section for further information, including how to the project.

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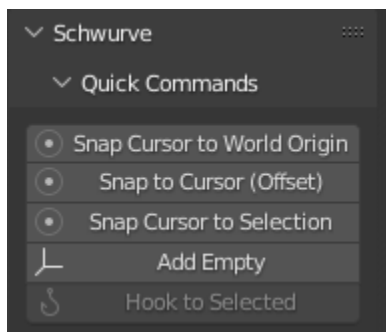
**Note:** This project is under active development.

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## CONTENTS

### 1.1 Quick Commands



#### 1.1.1 Universal Commands

##### Snap Cursor to World Origin

Same as menu command to reset Cursor to World origin of 0,0,0

##### Snap to Cursor(Offset)

Same as menu command but useful for Curve object Control Points and Handles being moved without collapsing the handles and control points all in the same location.

##### Snap Cursor to Selection

Same as menu command to snap cursor to origin of active object

## 1.1.2 Object Mode Commands

### Add Empty

Adds an empty at cursor position

## 1.1.3 Edit Mode Commands

### Hook to Selected

Only available if Empty and Mesh or Curve (as active object) are both selected. This command will create a hook modifier on the object, using the selected empty associated with the selected vertices/control points. You can use the *Add\_Empty* to create the Empty.

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### Directions to Use Hook Selected

1. In Object Mode
    1. Select Empty
    2. Shift+Select Mesh or Curve Object
  2. In Edit Mode
    1. Select Vertex or Vertices (Control Point(s)) to define Hook Position. NOTE: If multiple vertices or control points are selected it will be the location in the center of the selected vertices/points.
    2. Click on “Hook to Selected” button.
  3. In Object Mode
    1. Choose the Empty.
    2. Hit G to move the selection in the Viewport to verify that empty moves vertex/vertices on Curve or Mesh.
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## 1.2 Additive Editing

### 1.2.1 Curve Chains

#### Curve to Armature

Creates Armature from Curve, while keeping original Curve Object, and a new Mesh (i.e., original curve converted to mesh)



### Curve 2 Arm Skin Rig

Creates Armature from Curve, while keeping original Curve Object, and a new Mesh (i.e., original curve converted to mesh) with Skin Modifier applied to mesh

### Curve to Simple Armature

Creates a low resolution Armature from Curve based on number of control points on Curve (i.e., number of curve vertices), while keeping original Curve Object, and a new low resolution Mesh (i.e., low resolution copy of original curve converted to mesh)

### Curve 2 Simp Arm Skin Rig

Creates a low resolution Armature from Curve based on number of control points on Curve (i.e., number of curve vertices), while keeping original Curve Object, and a new low resolution Mesh (i.e., low resolution copy of original curve converted to mesh) with Skin Modifier applied to mesh

### Curve 2 Simp Cloth Arm

Creates a low resolution Armature from Curve based on number of control points on Curve (i.e., number of curve vertices), while keeping original Curve Object, and a new low resolution Mesh (i.e., low resolution copy of original curve converted to mesh) with Cloth simulations modifier applied to mesh

## 1.3 Mesh Additive Editing

Mesh Additive Editing is active when you have a selected Mesh Object. It can be used to apply physics, armatures and setups from the Mesh Object.

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**Note:** In order to work properly it is best to have Mesh Objects without faces and branches from vertices.

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**Mesh to Armature** - Button used to create an Armature from a Mesh object with two additional options.

**Rigged Skin** - when this option is checked the Skin Modifier is added to the Mesh Object and is parented to the Armature that is generated.

**Cloth Sim** - when this option is checked the Cloth Sim Modifier is added to the Mesh Object.

**Cloth Empty Vertex Parents** -

**Cloth Mesh Arm Bind** - Button used to create a setup where the Mesh Object has a Cloth Sim Modifier added, an Armature in the shape of the the Mesh Object, Empties that have been parented to the Mesh Object and control the location of the Armature Bones. This also allows you to adjust the **Cloth Sim Settings** in realtime once the setup has been generated.

## 1.4 Armature Additive Editing

## 1.5 Cloth Sim Settings

These settings can be set prior to activating the **Geometry** menu commands or after a setup that uses cloth simulations has been generated.

### 1.5.1 Stiffness

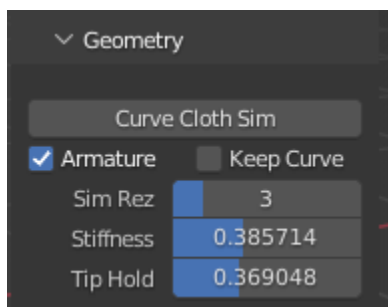
This setting applies a proportional pin weight to the vertices in the mesh with the cloth sim where the base is always with a weight of 1.0 and decreases at each vertex point until you get to the last vertex. Stiffness is just a multiplier where you can increase/decrease all of the weights beyond the base vertex. The lower the value the more sensitive the setting becomes, but is also a good place to find the best simulation to emulate things such as hair, rope, and other strand-like objects.

### 1.5.2 Tip Hold

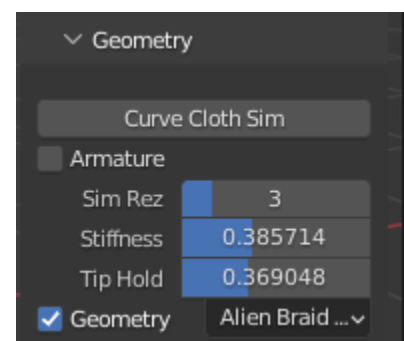
This setting is useful in making sure that the stiffness setting doesn't create too much of a limp end of the strand and will inherit the weight of vertices with lower index values keeping the tip from being limp in the cloth simulation. It's operates like the blue pill to avoid flacid sims.

As of right now the Schwurve add-on does not create collisions with these simulations, but is something that will be implemented in future versions if there is substantial interest in updating and if Blender development doesn't make such an add-on unnecessary.

## 1.6 Geometry



This is the marquee feature of the Schwurve add-on allowing you to specify various options to convert a Curve Object into a fully functioning set-up containing an integrated system that is bound to a generated Mesh cloth simulation with hooked-Empties.



## 1.6.1 Pre-Generation Settings

### Curve Cloth Sim Button

This is the button that applies the settings set forth below to create your Schwurve set-ups. You will likely want to adjust the settings to your preferences based on your desired use of the set-ups.

### Armature Checkbox

This option tells the add-on that you your set-up to consist of an Armature bound to a Mesh with a Cloth simulation modifier applied. The cloth simulation controls the armatures movements. This allows you to have an Armature with physics as the parent of another mesh. Moreover, if this option is selected you will also have the option to keep the original curve, but eliminates the *Geometry Checkbox* option. See *Keep Curve* and *Geometry Checkbox* options below.

### Keep Curve Option

This option keeps the original curve that generates the physics-based Armature set-up but is not a necessary part of the set-up and is not interacting with the set-up.

### Sim Rez Slider

This dictates the resolution of the simulation ((the number of vertices/control points in original curve - 1) \* the Sim Rez value). For instance, if you set the Sim Rez to 3 and the curve has three (3) control points, the simulation will contain six (6) segments (e.g., six armature bones). This value can be set from 1 to 12, and can only be set prior to applying the set-up.

### Stiffness

This sets the initial weighting of the cloth simulation where higher values result in a stiffer simulation and lower values result in a limper simulation. Note that the values are very sensitive on the low end and can change the simulation more dramatically than higher end values. This value can be modified after the “Curve Cloth Sim” Button is applied in the “Cloth Sim Settings”.

### Tip Hold

This set the initial weighting of the cloth simulation on the “tip” end of the simulation so that this end can be more or less consistent with the rest of the simulation. This value can be modified after the “Curve Cloth Sim” Button is applied in the “Cloth Sim Settings”.

Geometry Checkbox

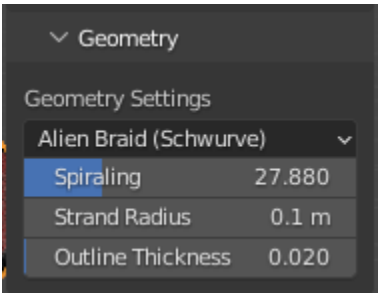
This option tells the add-on that you want your set-up to include Curve-based Geometry Nodes systems, and allows you to select specific Schwurve Geometry Nodes as described in the *Schwurve Nodes Dropdown* section below.

Schwurve Nodes Dropdown

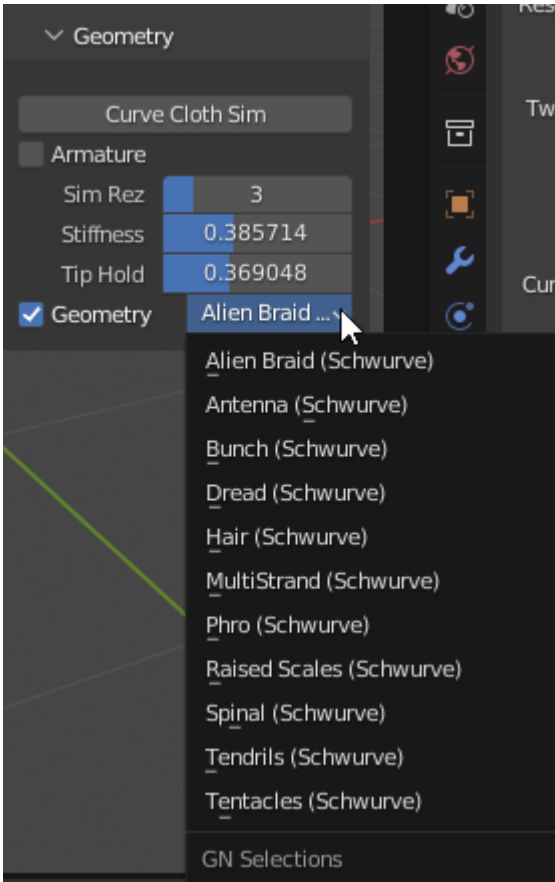
Schwurve comes pre-loaded with several Geometry Nodes set-ups specifically designed to work with the plugin, which are automatically filtered by Schwurve through the use of the “(Schwurve)” string in the Nodetree name. You can create your own by utilizing the same string in a new Nodetree that Schwurve will recognize. When you select your desired Schwurve Nodetree it will apply that set-up to your Curve object (multiple separated curves in the same Curve object will be converted to separate systems organized by collections with the same Schwurve Nodetree applied to each one but separately modifiable once created).

1.6.2 Post-Generation Settings

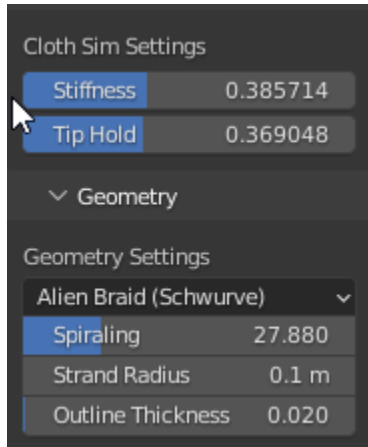
Geometry Settings



These settings are specific to the Schwurve Geometry Nodetrees allowing you to modify inputs of those Nodetrees in realtime and change the desired Schwurve set-up.



## Cloth Sim Settings



You can also modify the Cloth Sim Settings in realtime above the Geometry Settings once you have generated the Schwurve Set Up. See *Stiffness* and *Tip Hold* sections for more information about the Stiffness and Tip Hold controls.

## Schwurve Nodes Dropdown

As stated above, this dropdown menu will contain all of your Schwurve Geometry Nodetrees that you can apply to the selected Curve.

## Schwurve Nodes Inputs

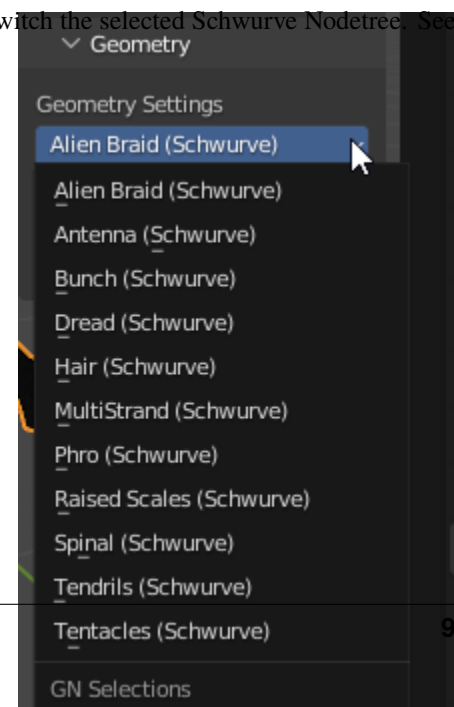
These settings will vary based on the applied Schwurve Nodetree, but will only display inputs with Float and Integer values in this version. You can adjust these sliders and the results will immediately translate in the viewport allowing you to control your generated set up.

**Note:** The values will reset to default and will not be maintained if you switch the selected Schwurve Nodetree. See “Setting Up Schwurve Nodes” for creating your own Schwurve Nodes.

## 1.7 Usage

### 1.7.1 Installation

To use Schwurve, first install the zip file in Blender:



## 1.7. Usage

## 1.8 API

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*schwurve*

Schwurve - Blender add-on.

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### 1.8.1 schwurve

Schwurve - Blender add-on.

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