

Enabling Physics Simulation on Grooms

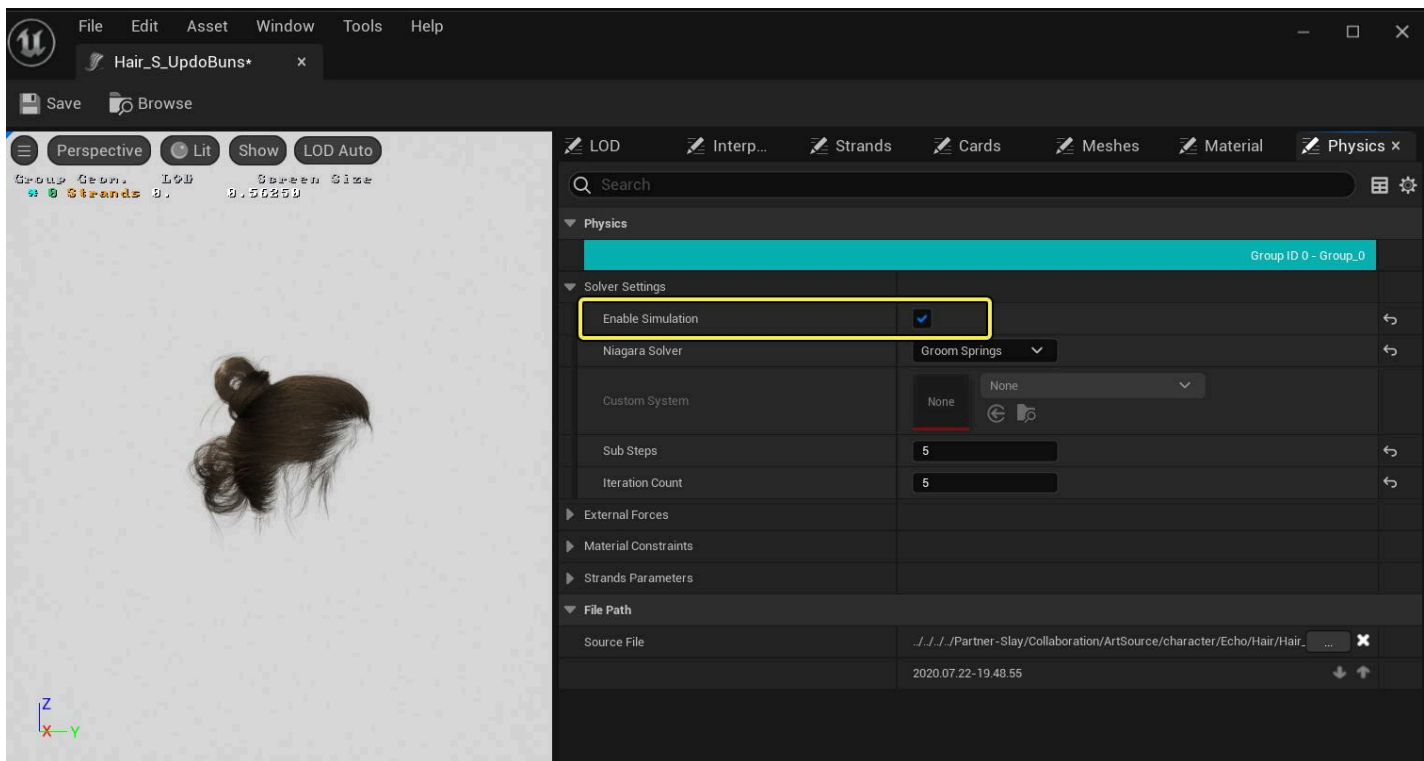
Learn how to enable and configure physics on grooms.



You can set up physics simulations for your grooms by enabling settings within the [Groom Asset Editor](#) and the Groom component.

Enabling Physics Simulation on a Groom

To enable Physics simulation for a groom go to the **Groom Asset Editor > Physics** panel. Enable the checkbox for **Enable Simulation**.



Once enabled, the groom should now simulate physics. Below is an example of the groom simulation while a character is walking.

Physics Simulation Properties

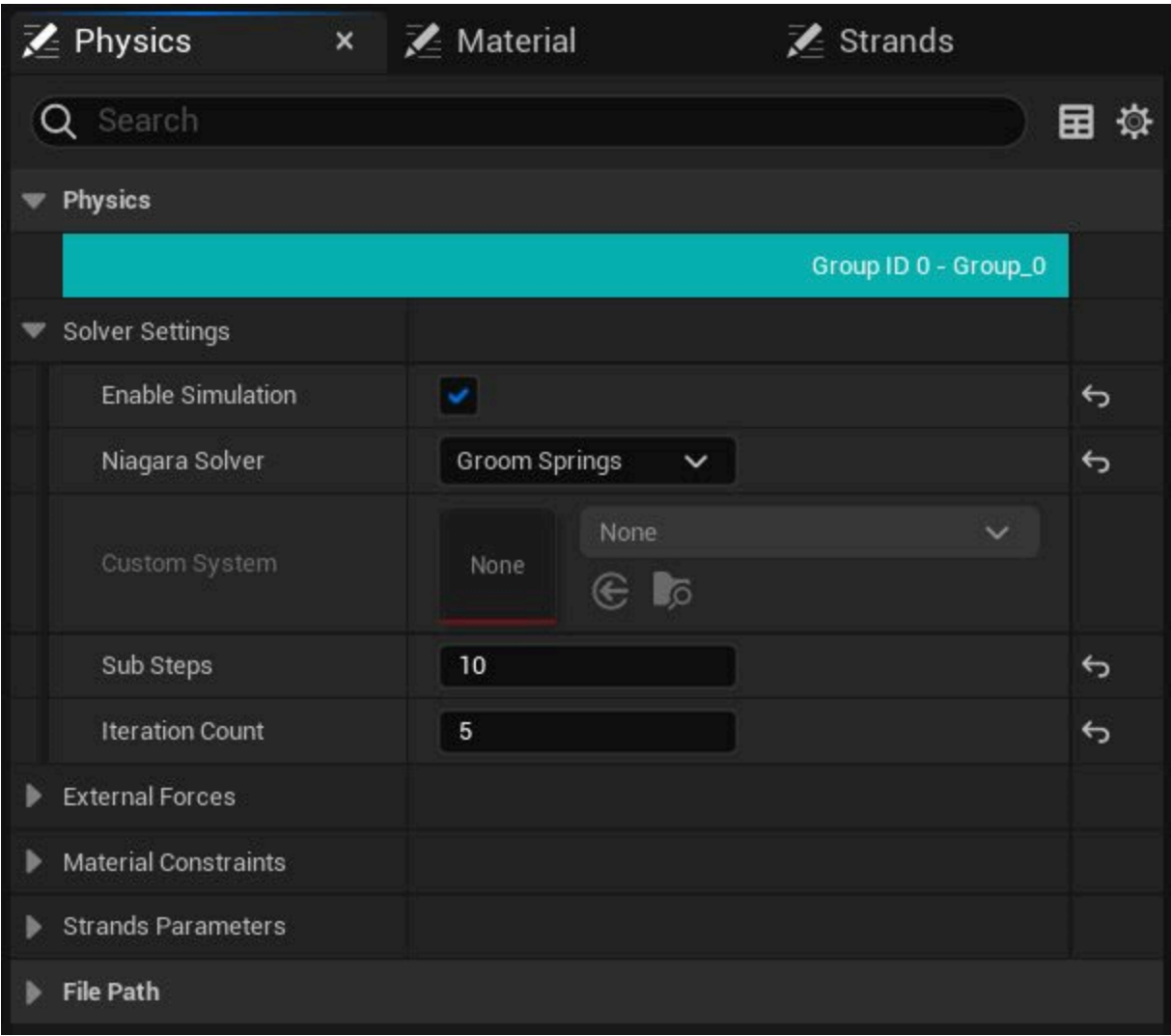
You can find the simulation properties for grooms in the Groom Asset Editor and on a Groom component.

Groom Asset Editor Simulation Properties

The following simulation settings are found in the Groom Asset Editor under the **Physics** and **LOD** panels.

Physics Panel Settings

The following settings are found in the **Physics** panel:



Property	Description
Solver Settings	
Enable Simulation	Enables physics simulation for this groom grouping.
Niagara Solver	Select the solver to be used for simulation: <ul style="list-style-type: none">Groom Rods:Groom Springs:Custom Solver:
Custom System	Add a custom Niagara system to use when the property Niagara Solver is set to Custom Solver.
Sub Steps	The number of sub steps to be done per frame. Solver calls are done at 24 frames per second.
Iteration Count	The number of iterations to solve constraints with the XPBD solver.
External Forces	
Gravity Vector	The acceleration vector measured in cm/s2 to be used for gravity.
Air Drag	The coefficient between 0 and 1 to be used for air drag.

Property	Description
Air Velocity	The velocity of the surrounding air measured in cm/s.
Bend Constraint	
Solve Bend	Enables solving of the bend constraint during the XPBD loop.
Project Bend	Enables the projection of the bend constraint after the XPBD loop.
Bend Damping	Damping applied for the bend constraint using a value between 0 and 1.
Bend Stiffness	The stiffness for the bend constraint in GPa.
Bend Stiffness Scale	This curve determines how much the bend stiffness is scaled along each strand. The x-axis range is 0,1, where 0 maps to the root and 1 to the tip of the strand.
Stretch Constraint	
Solve Stretch	Enables solving of the stretch constraint during the XPBD loop.
Project Stretch	Enables the projection of the stretch constraint after the XPBD loop.
Stretch Damping	The damping for the stretch constraint using a value between 0 and 1.
Stretch Stiffness	The stiffness for the stretch constraint in GPa.
Stretch Stiffness Scale	This curve determines how much the stretch stiffness is scaled along each strand. The X-axis range is 0,1, where 0 maps to the root and 1 to the tip of the strand.
Collision Constraint	
Solve Collision	Enables solving of the collision constraint during the XPBD loop.
Project Collision	Enables the projection of the collision constraint after the XPBD loop.
Static Friction	The static function used for collision against physics assets.
Kinetic Friction	The kinetic friction used for collision against physics assets.

Property	Description
Strand Viscosity	The viscosity between 0 and 1 that is used for self-collision.
Grid Dimension	The dimension of the grid used to compute the viscosity force.
Collision Radius	The radius to be used for collision detection against physics assets.
Radius Scale	This curve determines how much the collision radius is scaled along each strand. The X-axis range is 0,1, where 0 maps to the root and 1 to the tip of the strand.
Strand Parameters	
Strands Size	The number of particles per guide that are used for simulation.
Strands Density	The density of strands measured in g/cm3.
Strands Smoothing	The smoothing between 0 and 1 for the incoming guide curves that leads to better stability.
Strands Thickness	The strands thickness in centimeters that are used for mass and inertia computation.
Thickness Scale	This curve determines how much the strands thickness is scaled along each strand. The X-axis range is 0,1, where 0 maps to the root and 1 to the tip of the strand.

LOD Panel Properties

The following settings are found in the **LOD** panel:

Property	Description
Simulation	<div> Overrides the simulation used to represent this level of detail. Choose between the following: <ul style="list-style-type: none"> Auto: Uses the global value. Enable: Forcibly enables the simulation for this LOD. Disable: Forcibly disables the simulation for this LOD. </div>

Groom Component Properties

The following properties are available on a Groom component to override simulation settings set in the Groom Asset Editor.



Before a groom simulation can be overridden with a Groom component, the groom asset must first have **Enable Simulation** enabled in the Groom Asset Editor.

▼ Simulation Settings

Override Settings

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▼ Simulation Setup

Reset Simulation

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Debug Simulation

☐

Local Simulation

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Linear Velocity Scale

1.0

Angular Velocity Scale

1.0

Local Bone

root

Teleport Distance

50.0

▶ Solver Settings

▶ External Forces

▶ Material Constraints

Property	Description
Physics Asset	The physics asset to be used for hair simulation.
Simulation Settings	
Override Settings	Makes this component's settings override the groom asset physics settings.
Simulation Setup	
Reset Simulation	Make this simulation reset at some point in time.
Debug Simulation	Makes the simulation strands visible.
Local Simulation	Makes strands simulation be done in local space.
Linear Velocity Scale	The amount of linear velocities sent to the local groom space from the reference bone.
Angular Velocity Scale	The amount of angular velocities sent to the local groom space from the reference bone.
Local Bone	The name of the bone used for the simulation of local space.
Teleport Distance	Teleport distance threshold to reset the simulation.
Solver Settings	

Property

Description

Enable Simulation	Enables the simulation of the groom groups / levels of detail. Requires both this setting and the one in the groom asset to be enabled.
External Forces	
Gravity Vector	The acceleration vector measured in cm/s2 to be used for gravity.
Air Drag	The coefficient between 0 and 1 to be used for air drag.
Air Velocity	The velocity of the surrounding air measured in cm/s.
Material Constraints	
Bend Damping	Damping applied for the bend constraint using a value between 0 and 1.
Bend Stiffness	The stiffness for the bend constraint in GPa.
Stretch Damping	The damping for the stretch constraint using a value between 0 and 1.
Stretch Stiffness	The stiffness for the stretch constraint in GPa.
Static Friction	The static function used for collision against physics assets.
Kinetic Friction	The kinetic friction used for collision against physics assets.
Strand Viscosity	The viscosity between 0 and 1 that is used for self-collision.
Collision Radius	The radius to be used for collision detection against physics assets.