

Electric Rays Pro

USER MANUAL | VERSION 1.0

Developed by Kampa

www.jookitooz.com

kampatools@jookitooz.com

Contents

1. Welcome

2. Requirements and compatibility
Starting a URP scene
Camera
Global Volume & Post Processing
1 Click setup
Package dependencies

3. Package contents

4. Your first ray

5. Choosing a ray component

6. Shared controls
Inspector layout
Global controls
Resolution & Width
Displacement
Curve profiles
Shader & Visuals
Branches
Branch Profiles
Motion and lifecycle
The Extra Tab
Editor updates and gizmos
Rendering options

7. PointToPoint rays
Basic setup
2D setup
The Ray Tab
Ray Update Time
Targets & Constraints
Mid Point Controls
PointToPoint: Motion controls
PointToPoint: Branches controls
PointToPoint: Extra controls

8. Lightning rays
Basic setup
2D setup
The Ray Tab
Global
Origin & Strike Direction
Fractal Parameters
Lightning: Motion controls
Lightning: Branches controls
Lightning: Extra controls

9. OnSurface rays
Basic setup
Non-deforming surfaces
Skinned meshes
New component defaults
Requirement warnings and fixes
No Target Surface
No Collider Found
Read/Write Disabled
The Ray Tab
Global
Ray Update Time
Length & Arch
OnSurface: Motion controls
OnSurface: Branches controls
OnSurface: Extra controls

10. FromSurface rays
Basic setup
Requirement warning
No Mesh Filter Found
The Ray Tab
Global
Surface Target
Filter by PolyGroup
Strike Direction
Lag Endpoints (World Inertia)
Fractal Parameters
FromSurface: Motion controls
FromSurface: Branches controls
FromSurface: Extra controls

11. Materials and appearance
Material settings and instance overrides
Colours, core and edges
Noise and flow
Endpoint fading
Bloom and brightness

12. Exploring SamplesScene
Selecting an example
Inspecting a configuration

13. Using ERP from scripts
Enabling and disabling rays
Triggering strikes
Moving endpoints
Changing settings
Surface methods

14. Performance
Geometry and branches
Updates
Skinned surfaces
Measurements

15. Support and release information

1. Welcome

Electric Rays Pro (ERP) creates animated electric effects in Unity's Universal Render Pipeline (URP).

Connect objects with electric arcs, create lightning strikes, move electricity across surfaces or emit rays from static and deforming meshes. ERP includes four ray components, seven ready-to-use prefabs and an interactive SamplesScene.

The effects animate directly in the editor, allowing you to position objects and adjust their appearance without entering Play mode.

This manual explains how to set up ERP, choose a ray component and customise its behaviour. For a shorter introduction, use the included Quickstart Guide.



Figure 1. Electric effects created with ERP

2. Requirements and compatibility

ERP requires **URP**. The Built-in Render Pipeline and HDRP are not supported.

Unity version	URP version	Tested platform
2022.3.62f2	14.0.12	Windows
6000.3.16f1	17.3.0	Windows

ERP was developed in Unity 6000.3.16f1. These are verified test configurations; other versions and platforms have not yet been verified.

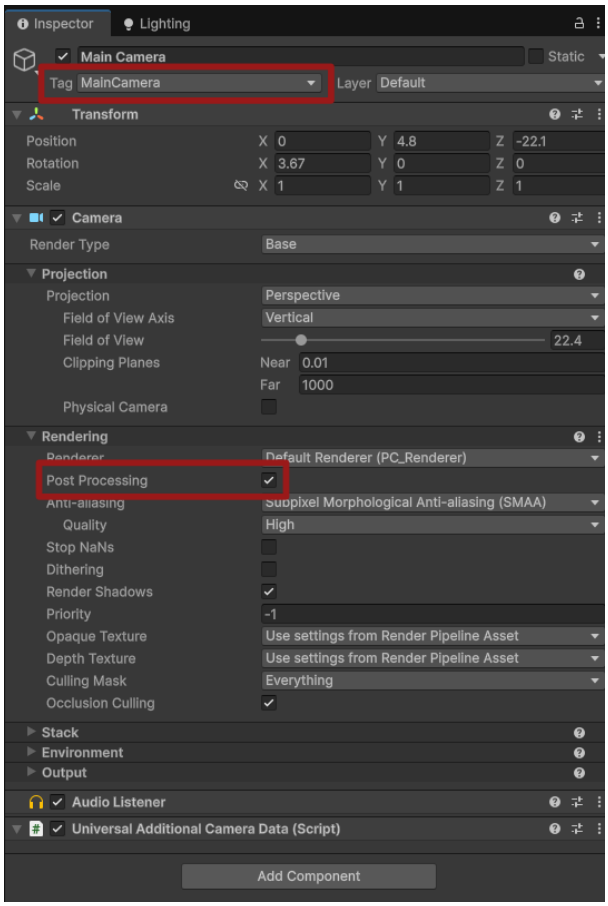
Starting a URP scene

If you already have a configured URP project, create or open a scene in it. To start from scratch:

1. Create a project in Unity Hub using the **Universal 3D / URP template**
2. Open the project and create a new scene
3. Import Electric Rays Pro

Camera

Your scene needs an enabled camera tagged **MainCamera** with **PostProcessing** enabled. ERP uses this camera to orient the ray ribbons towards the viewer and postprocessing to add the distinct glow of electric rays.



MainCamera tag and Post Processing enabled

Global Volume & Post Processing

ERP's ray material uses HDR colours. Bloom spreads their brightness around the rays to produce the glow.

1. Verify that **Post Processing** is enable in the Main Camera

2. Add a **Global Volume**, or use an existing one

3. Create or assign a **Volume Profile**

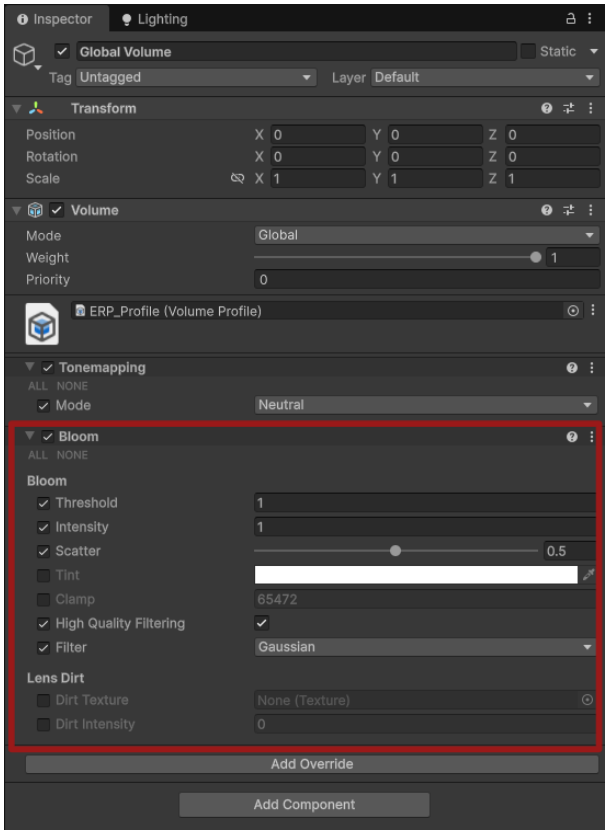
4. Add the **Bloom** override

5. Enable its **Intensity** override and increase its value

6. Adjust Bloom's threshold and intensity for the desired appearance

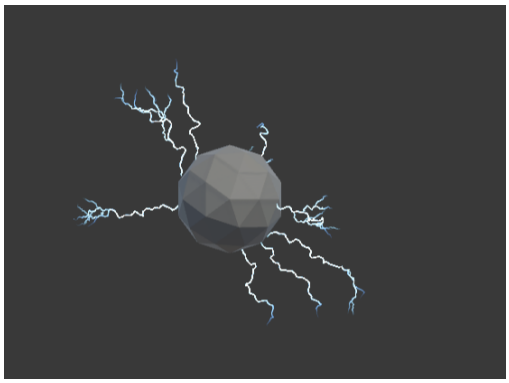
Ensure the Volume is enabled and its weight is greater than zero. The camera's Volume Layer Mask must include the Volume's layer.

The rays remain visible without Bloom, but they will not have the surrounding glow.

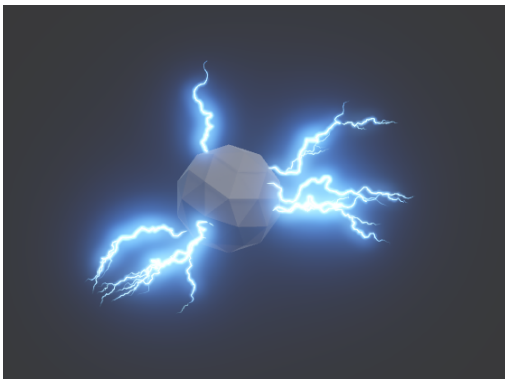


Global Volume with Bloom enabled

Bloom comparison



Bloom disabled



Bloom enabled

1 Click setup

All ray components automatically check for the correct setup. Click **Fix Post-Processing Setup** to enable Post Processing and/or create a Global Volume with the minimum setup.

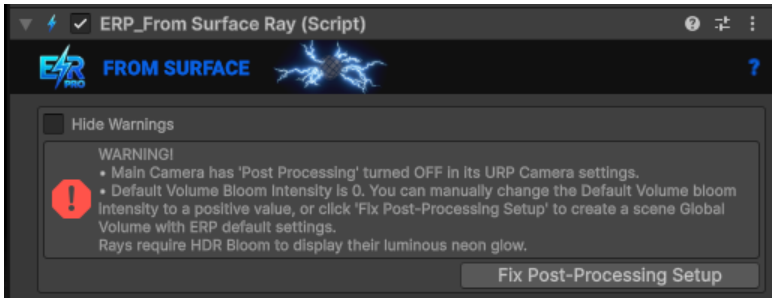


Figure 2. Use Fix Post-Processing Setup to apply the minimum configuration

Package dependencies

ERP has been tested in **Unity 2022.3.62f2** and **Unity 6000.3.16f1**.

Starting a new project with the **Universal 3D / URP template** includes the required packages.

It depends on **URP, Shader Graph, Burst and Mathematics**.

Samples Scene only: Unity UI is needed for SamplesScene; both old and new Input System are supported by the SamplesScene.

---

3. Package contents

The package includes:

- Four ray components and their custom Inspectors

- Seven ready-to-use ray prefabs

- The ray material and URP Shader Graph shader

- An interactive **SamplesScene** demonstrating ray types and practical examples

- A Quickstart Guide

- This manual

Component	Description
ERP_PointToPointRay	Connection shaped by Start, Mid and End nodes
ERP_LightningRay	Lightning towards a target or along a direction
ERP_OnSurfaceRay	Rays moving across a surface
ERP_FromSurfaceRay	Rays emitted from sampled mesh points

Prefab	Starting use
ERP_PointToPointRay_Prefab	Connection between points
ERP_LightningRay_Prefab	Lightning strikes

Prefab	Starting use
ERP_OnSurface_NonDeforming_Prefab	Crawling over a non-deforming surface
ERP_OnSurface_SkinnedMesh_Prefab	Crawling over a skinned mesh
ERP_FromSurface_NonDeforming_Prefab	Emission from a non-deforming mesh
ERP_FromSurface_NonDeforming_Polygroup_Prefab	Emission restricted to a mesh region
ERP_FromSurface_SkinnedMesh_Prefab	Emission from a skinned mesh

Use the prefabs as starting points and adjust their settings and references for your scene.

4. Your first ray

ERP effects run in the editor by default. Entering Play mode is not required.

1. Open a URP scene with the camera and glow settings described in Section 2

2. Drag **ERP_PointToPointRay_Prefab** into the scene

3. Position its StartPoint and EndPoint nodes

4. Adjust MidPoint or its automatic offset to shape the bend

5. Select the object containing ERP_PointToPointRay and adjust its width, colours, motion and branches

StartPoint defines the beginning; EndPoint defines the end. MidPoint is the central curve control point that you can move to curve the ray.

View the result in the Game view to judge its appearance through the Main Camera, including Bloom. Save the scene or create a prefab variant to reuse your configuration.

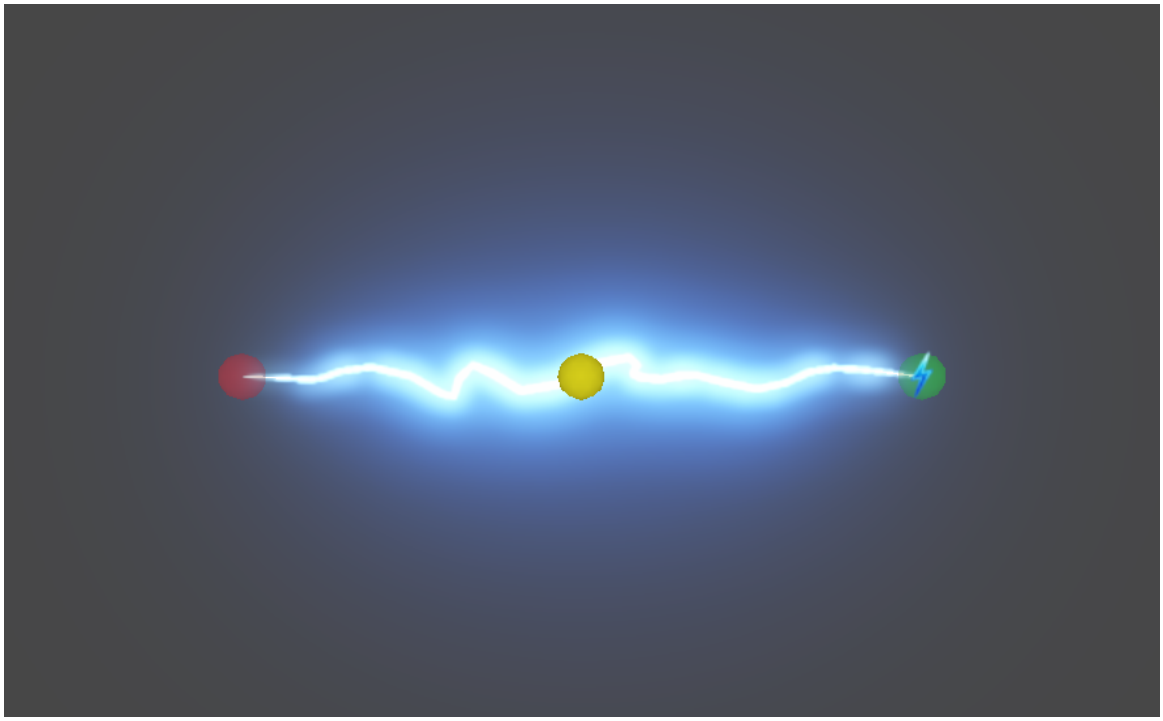


Figure 3. MidPoint is the central curve control point that you can move to curve the ray

5. Choosing a ray component

You want to…	Choose
Connect two points and control the bend	PointToPoint
Produce strikes towards a target or in a direction	Lightning
Move electricity across a surface	OnSurface
Emit electricity from a surface	FromSurface

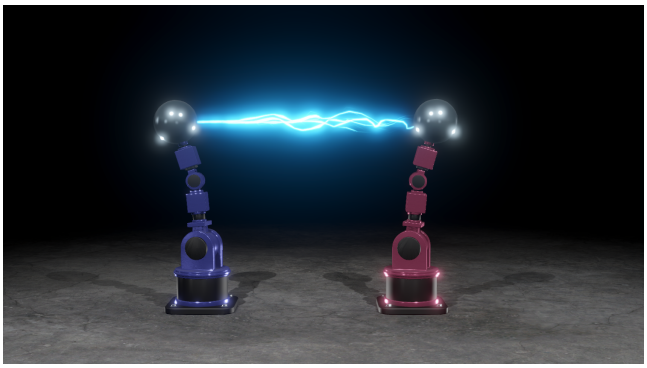
PointToPoint provides direct control over a connection through Start, Mid and End nodes. Use it for connections between devices or moving objects.

Lightning provides strikes with growing, holding and disappearing phases. Use it for target strikes, repeated discharges and cloud-style effects.

OnSurface follows a collision surface while the ray crawls over it. It supports non-deforming and skinned mesh workflows.

FromSurface samples emission positions on a mesh. It supports non-deforming and skinned sources, with optional region filtering.

Four ray types



PointToPoint - connect two objects.



Lightning - create electric strikes.



OnSurface - crawl over a surface.



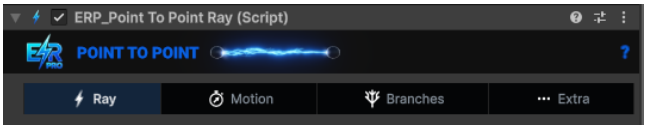
FromSurface - emit from mesh points.

6. Shared controls

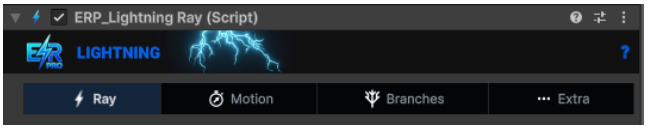
The four components share an Inspector layout and many appearance controls. Their chapters explain differences in setup and behaviour.

Inspector layout

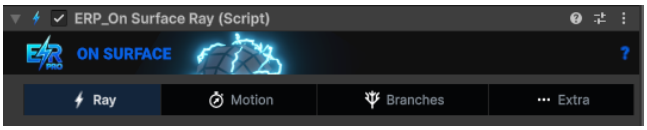
Tab	Purpose
Ray	Source, shape and appearance
Motion	Movement or lifecycle timing
Branches	Secondary paths
Extra	Editor updates, gizmos and rendering



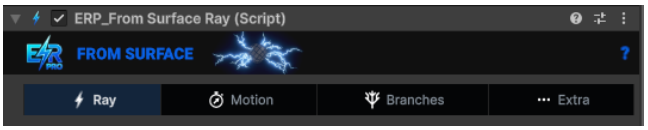
PointToPoint



Lightning



OnSurface



FromSurface

Global controls

Setting	Description
Enable Ray	Controls whether the effect is active
Ray Material	Material used to render it
Beams Count / Beams Per Point / Beams Per Ray	Ribbons associated with each ray

OnSurface and FromSurface also provide a ray count. This determines the number of crawling rays or emission points.

Use Enable Ray for lifecycle transitions. Disabling the GameObject or component stops the ray immediately.

Resolution & Width

Setting	Description
Num Segments	Subdivisions along the main path
Smoothing Passes	Smooths path changes
Min Width / Max Width	Ribbon width range
Width Multiplier	Scales ribbon width

More segments allow more detail but increase generated geometry. Smoothing softens sharp changes.

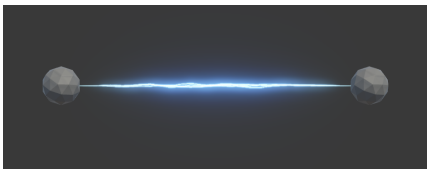
Displacement

Displacement moves the path away from its underlying shape. PointToPoint and OnSurface use Displacement Amount, Displacement Multiplier and a Displacement Profile. Lightning and FromSurface use fractal controls instead.

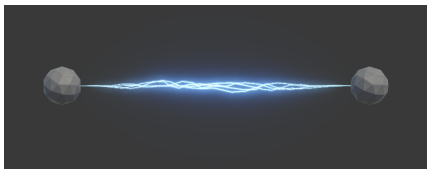
Displacement amount



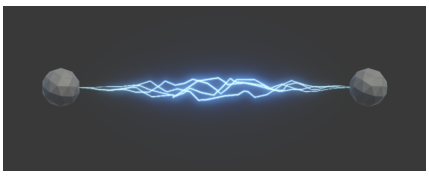
Displacement Amount = 0



Displacement Amount = 0.1



Displacement Amount = 0.25



Displacement Amount = 0.5



Displacement Amount = 1

Curve profiles

Profiles distribute a setting along a path.

- The horizontal axis runs from start to end of the ray.

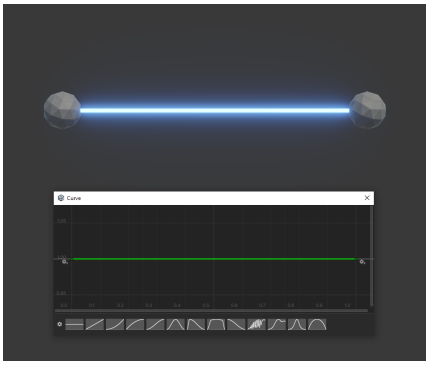
- The vertical axis controls the strength at each position

- **Width Profile** shapes ribbon thickness

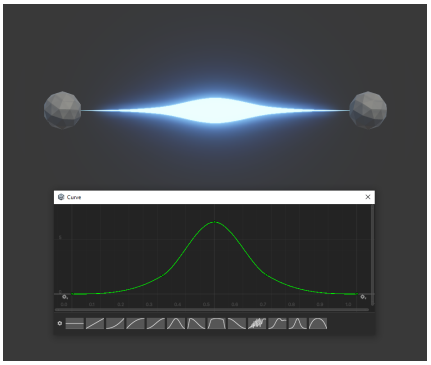
- **Displacement Profile**, where available, shapes displacement

Click the curve field to edit keys and tangents. Lower width towards the end to taper a ray, lower displacement near the endpoints to concentrate variation in the middle or be creative and create your own rays.

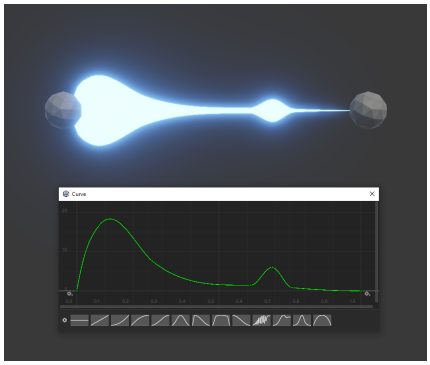
Width profiles



Constant width profile

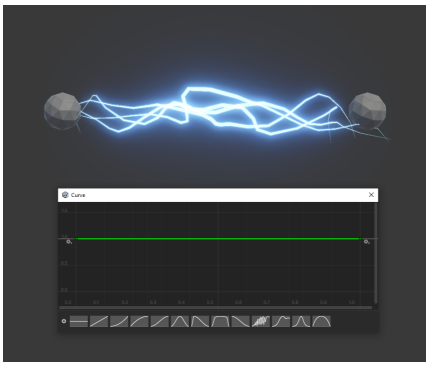


Width concentrated in the centre

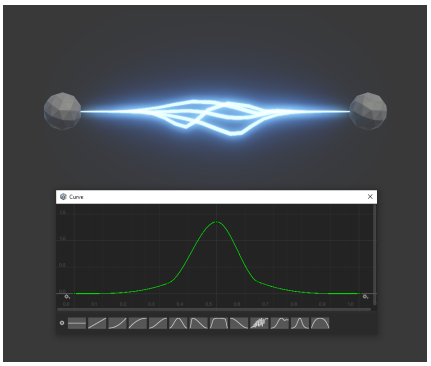


Two bulges shaped by the width curve

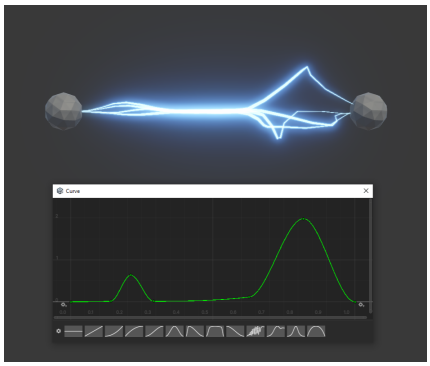
Displacement profiles



Constant displacement profile



Displacement concentrated in the centre



Displacement distributed in two bulges

Shader & Visuals

> You can use your own material, but this section will be hidden in the Inspector as it relies on the ERP_Ray_Mat provided by default.

Override Material is enabled by default to avoid accidentally changing the shared material. Override controls affect only the selected component.

Sync Overrides From Material copies the assigned material's values into the component. With overrides disabled, the displayed shader controls edit the shared material.

Setting	Description
Core Color / Edge Color	HDR colours at the centre and towards the edges
Core Width	Visible core width inside the ribbon
Edge Softness	Edge transition softness
Noise Scale	Shader noise scale
Flow Speed	Animated noise speed
Fade Start / Fade End	Fading along the ray

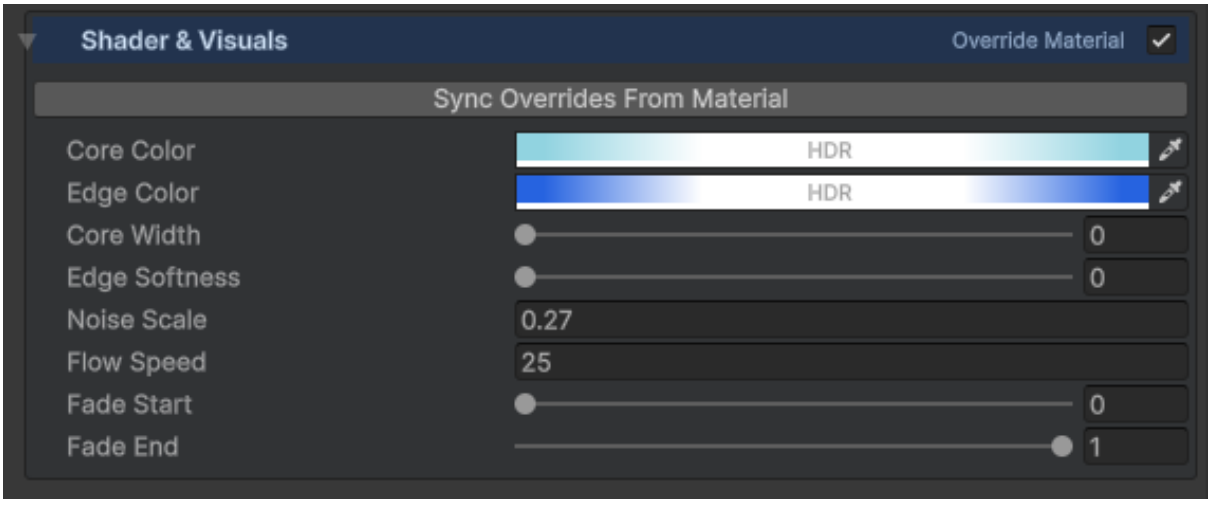


Figure 4. Shader & Visuals controls with component material overrides enabled

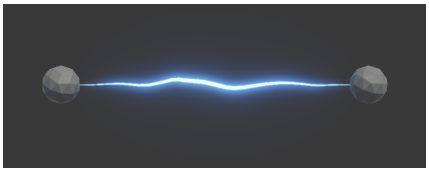
Branches

Setting	Description
Sub Branch Levels	Number of branching levels
Branches Per Parent	Child or potential child branches per parent
Branch Width Multiplier	Width relative to the parent
Branch Displacement Multiplier	Branch displacement scale
Branch Spread Angle / Bifurcation Spread (Deg)	Fork spread
Branch Resolution	Branch segment density
Branch Target Bias	Bias towards the destination
Branch Smoothing Passes	Branch path smoothing

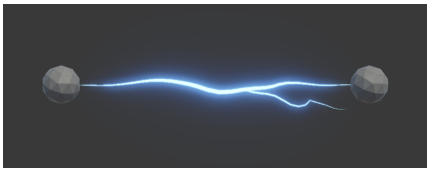
Set Sub Branch Levels to zero to remove branches. Additional levels can multiply the number of paths.

PointToPoint and OnSurface use generation ranges and minimum/maximum lengths. Lightning and FromSurface use probability and length scaling.

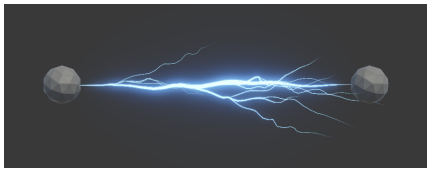
Branching complexity



No branches



1 sub-branch level
1 branch per parent



2 sub-branch levels
3 branches per parent

Branch Profiles

Enable Use Custom Branch Profiles for independent branch profiles; otherwise branches use the main profiles. All four provide a Width Profile. PointToPoint and OnSurface also provide a Displacement Profile. Inherit Parent Width controls width inheritance.

Motion and lifecycle

PointToPoint controls growth, disappearance and staggering. Lightning and FromSurface provide strike lifecycles. OnSurface provides growth/disappearance and surface crawling.

The Extra Tab

Editor updates and gizmos

ERP animates in the editor by default. The Extra tab contains editor-update settings and gizmo controls. You can switch the Scene view's Gizmos toggle to hide/show the markers.

Rendering options

Camera alignment and minimum screen thickness are protected by an Unlock button. Keep their defaults while setting up the effect; adjust them for a specific rendering requirement. Reset to Default restores the recommended camera-alignment settings.

7. PointToPoint rays

PointToPoint creates a connection shaped by StartPoint, MidPoint and EndPoint. See Section 6 for shared appearance controls.

Basic setup

1. Add ERP_PointToPointRay_Prefab to your scene

2. Move the StartPoint (green gizmo) and EndPoint (red gizmo) nodes at the desired positions on the Scene View, or enable **Constrain to Objects** to attach them to custom Transforms

3. Adjust MidPoint or its settings to change the curve

4. Select the component and customise its appearance

PointToPoint: visual setup

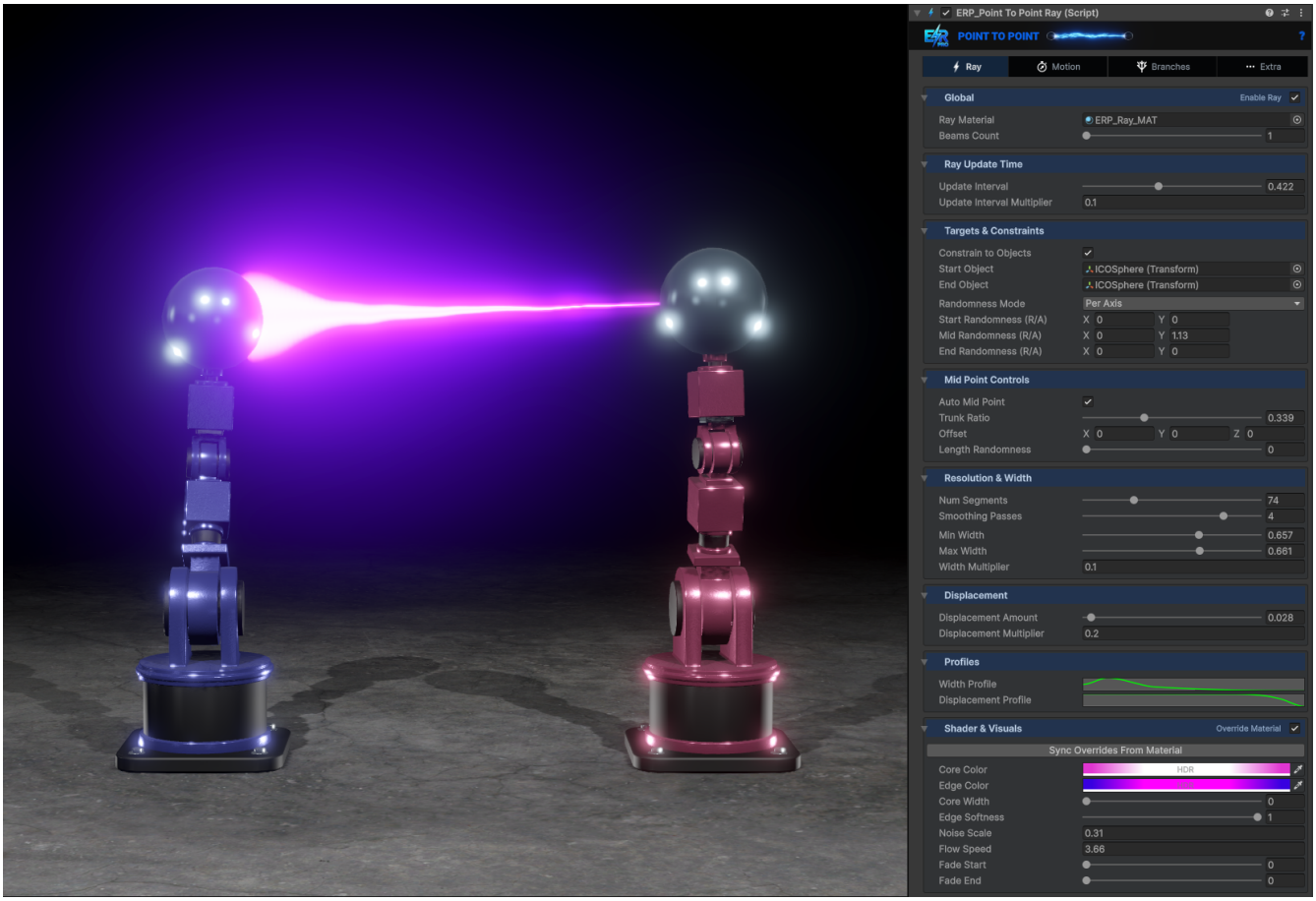


Figure 5. PointToPoint visual setup

2D setup

In the **Ray** tab, open **Global** and enable **2D Mode**. The ray renders on the world XY plane.

Move **StartPoint**, **MidPoint** and **EndPoint** as usual, or use **Constrain to Objects** to connect two transforms. The ray uses StartPoint's world Z depth and projects the midpoint and endpoint onto that XY plane. The source transforms stay where you placed them.

Use **Sorting Layer** and **Order in Layer** to place the ray in front of or behind sprites. Preview it through your orthographic Main Camera. See Section 2 for camera post-processing and Bloom setup.

> For smoother edges in 2D, enable High Quality Filtering in the Bloom override on your Global Volume. This helps remove the visible sawtooth edges around the ray.

The Ray Tab

Ray Update Time

The effective random shape-update interval is **Update Interval × Update Interval Multiplier**. Increase it for slower changes.

Targets & Constraints

With Constrain to Objects enabled, Start Object and End Object define the endpoints.

Spherical randomness provides Start, Mid and End amounts. PerAxis separates **R (radial)** variation sideways around the connection and **A (axial)** variation along it. Endpoint randomness can move the visible ray away from the target.

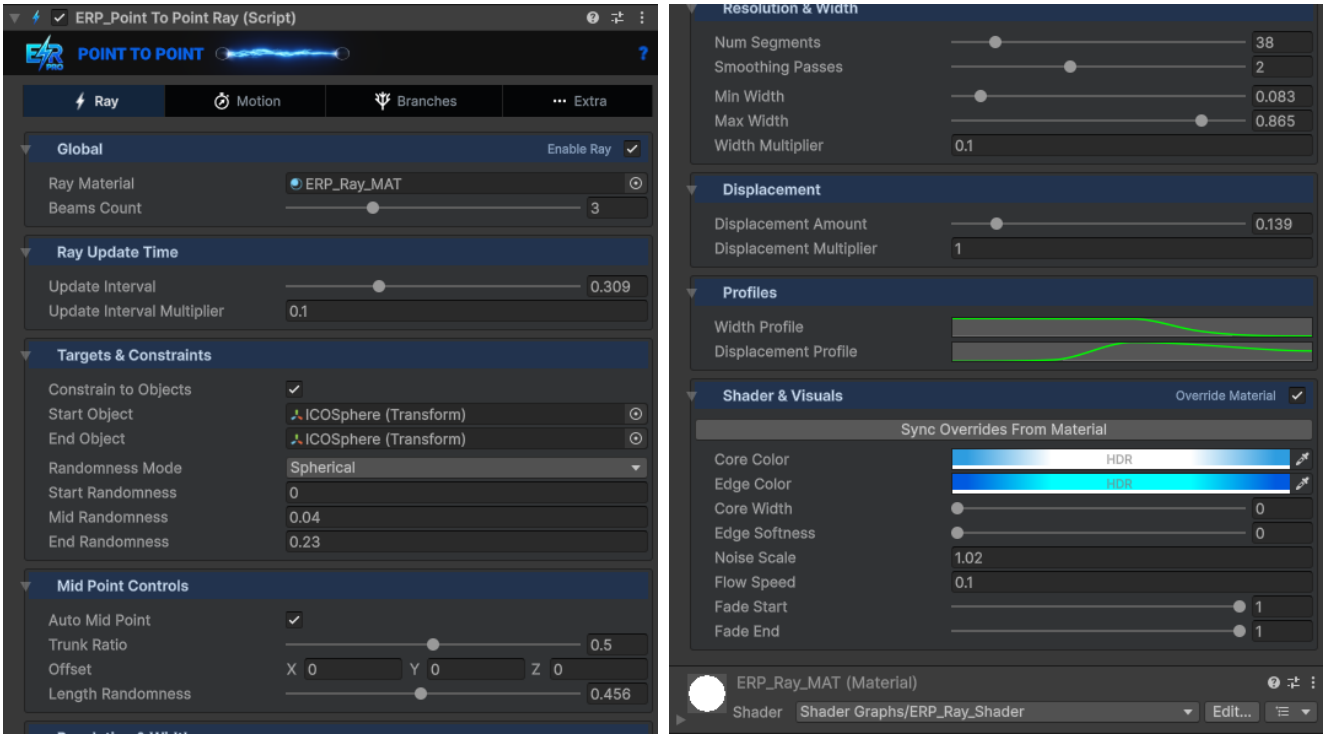
Mid Point Controls

MidPoint shapes the bend rather than defining a point the ray must pass through.

With Auto Mid Point enabled, Trunk Ratio positions the base control point along the connection and Offset adds a displacement in the ray object's local space. Length Randomness varies the automatic control point along the connection. Moving MidPoint in the editor updates its automatic offset.

With Auto Mid Point disabled, place MidPoint manually. Follow Target can be None, Start or End: it either stays independently positioned or moves by the selected endpoint's movement.

PointToPoint: Ray tab reference

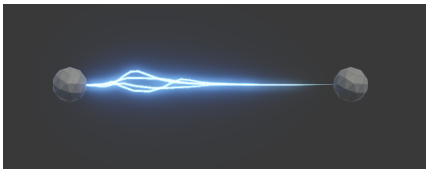


Ray tab, upper and lower portions. Setting values shown are an example configuration.

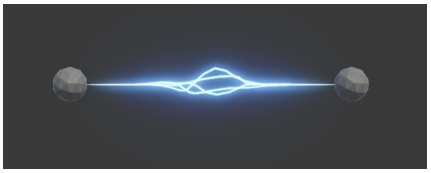
Control	Explanation
Beams Count	Sets the number of ribbons in the connection.
Update Interval / Update Interval Multiplier	Sets the interval between random path updates; the multiplier scales that interval.
Constrain to Objects	Uses assigned objects as start and end constraints.
Start Object / End Object	Assigns the transforms followed by the endpoints.
Randomness Mode	Chooses spherical noise or separate radial and axial noise.
Start / Mid / End Randomness	Sets the spherical random movement around each control point.
Per-axis radial / axial randomness	Separately controls noise across and along the ray at each control point.
Auto Mid Point	Positions the midpoint automatically between the endpoints.
Trunk Ratio	Places the automatic midpoint along the start-to-end span.
Offset	Adds an offset to the automatic midpoint.
Length Randomness	Adds randomness to automatic midpoint placement.
Follow Target	Selects which endpoint movement the midpoint follows.
Displacement Amount / Displacement Multiplier	Sets and scales the amount of path variation.

Control	Explanation
Displacement Profile	Shapes displacement along the path.
Enable Ray	Enables the effect and plays its growth or disappearance transition.
Ray Material	Assigns the material used to draw the ray ribbons.
Num Segments	Sets path subdivisions; more segments give finer geometry.
Smoothing Passes	Smooths the generated path; more passes soften sharp corners.
Min Width / Max Width	Sets the range of ribbon widths.
Width Multiplier	Scales the width range without changing its endpoints.
Width Profile	Shapes width along the ray from start to end.
Override Material	Applies component-specific shader values.
Sync Overrides From Material	Copies the assigned material values into the override controls.
Core Color / Edge Color	Sets the colours of the inner core and outer edges.
Core Width	Sets the proportion occupied by the bright inner core.
Edge Softness	Controls the softness of the ribbon edges.
Noise Scale	Scales the shader noise pattern.
Flow Speed	Sets the speed of animated shader noise.
Fade Start / Fade End	Controls fading at the respective endpoint.

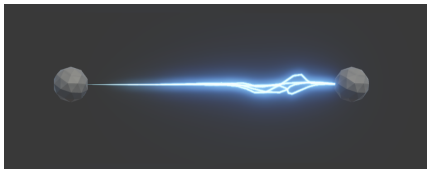
Automatic midpoint: Trunk Ratio



Trunk Ratio = 0



Trunk Ratio = 0.5



Trunk Ratio = 1

PointToPoint: Motion controls

Use Enable Ray to play growth and disappearance transitions.

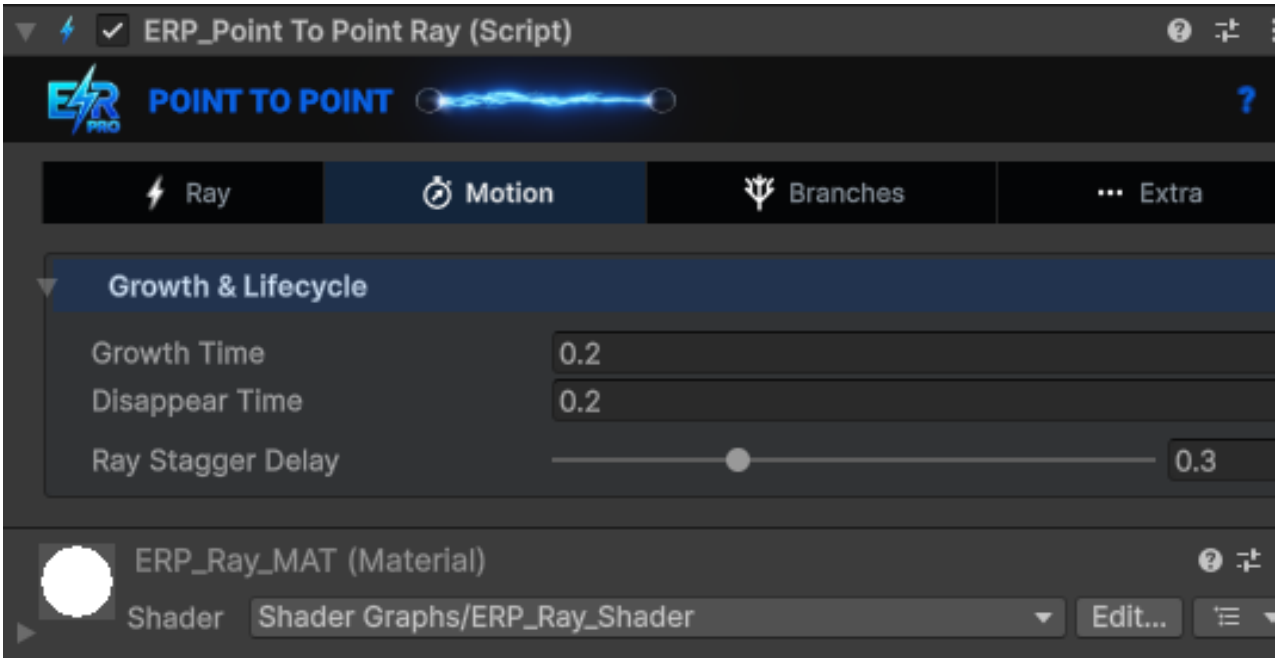


Figure 6. PointToPoint: Motion tab. Example settings.

Control	Explanation
Growth Time	Time the ray spends to grow from start to finish
Disappear Time	Time the ray spends to disappear from start to finish
Ray Stagger Delay	Sets random differences between ribbon start times.

PointToPoint: Branches controls

Branch lengths are relative to the main connection. Branch Reverse Direction reverses branching towards the start; it does not disable branches.

Sub Branch Levels: Sets the number of recursive branch generations.

Branches Per Parent: Sets the number of candidate branches on each parent path.

Branch Width Multiplier: Scales branch widths relative to their parent.

Branch Displacement Multiplier: Scales branch path variation relative to its parent.

Branch Spread Angle / Bifurcation Spread (Deg): Sets the angular spread away from the parent path.

Branch Resolution: Controls branch geometry detail relative to the parent.

Branch Target Bias: Biases branch direction towards the destination.

Branch Smoothing Passes: Smooths branch paths.

Use Custom Branch Profiles: Enables separate curve profiles for branches.

Inherit Parent Width: Uses the parent width at the branch origin.

Width Profile: Shapes width along each branch.

Branch Reverse Direction: Reverses the branch direction along the parent.

Branch Gen Start / End: Limits where along the parent branches can originate.

Branch Length Min / Max: Sets the permitted branch-length range.

Displacement Profile: Shapes variation along each branch.

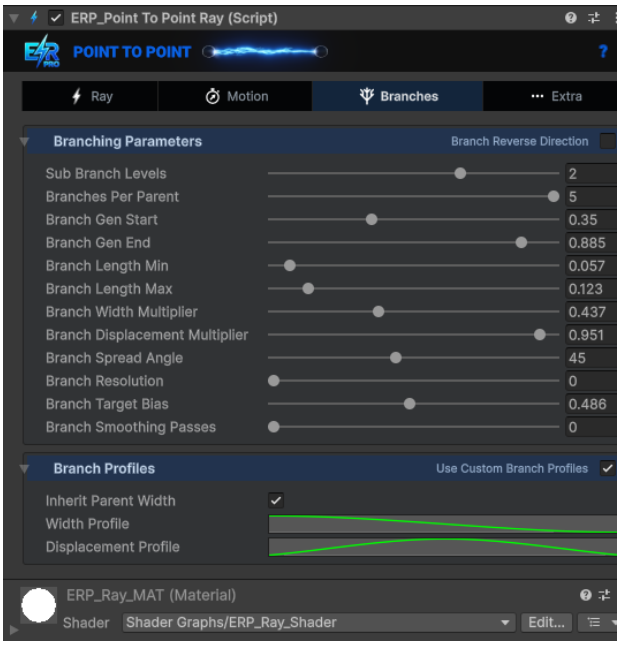


Figure 7. PointToPoint: Branches tab.

PointToPoint: Extra controls



Figure 8. PointToPoint: Extra tab. Example settings.

Control	Explanation
Editor Update Mode	Chooses when the ray is updated in the editor.
Show Node Gizmos / Node Gizmo Size	Shows control-point markers and sets their size.
Start / Mid / End Gizmo Color	Sets the colour of each control-point marker.
Draw Debug Ray Lines / Ray Lines Color	Shows path guide lines and sets their colour.
Rendering / Unlock	Unlocks the protected advanced rendering settings. Use the Scene view Gizmos toggle to show or hide guides.

8. Lightning rays

Lightning creates jagged strikes with growth, hold and disappearance phases. See Section 6 for shared appearance controls.

Basic setup

1. Add ERP_LightningRay_Prefab
2. Position the ray object or assign Origin Transform
3. Assign Target Ground/Object, or change Direction Mode for directional effects
4. Adjust shape and timing

Lightning: visual setup

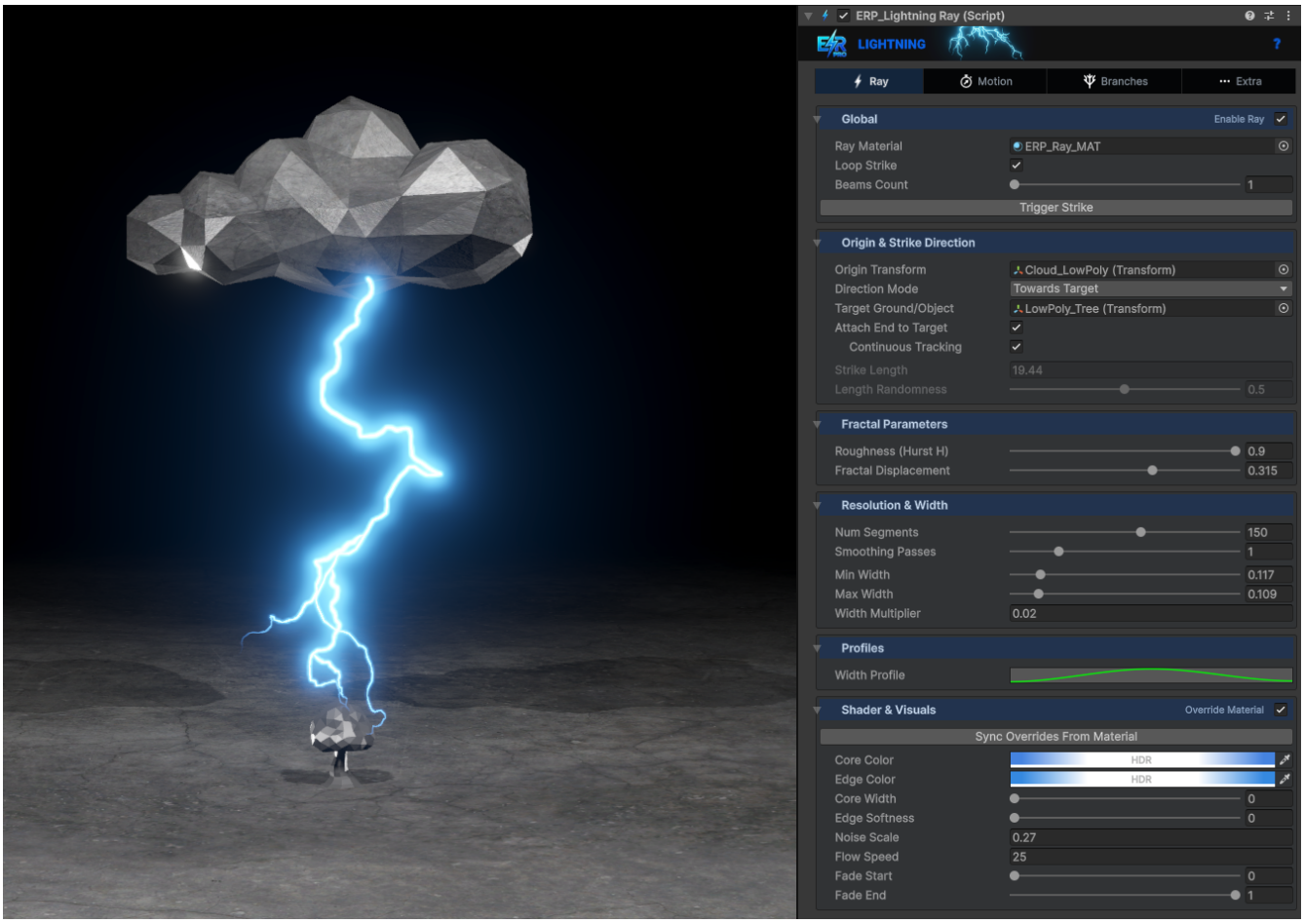


Figure 9. Lightning visual setup

2D setup

In the **Ray** tab, open **Global** and enable **2D Mode**. The ray renders on the world XY plane.

The strike stays at the origin's world Z depth. **TowardsTarget** uses the target's XY position; **Attach End to Target** and **Snap Length to Target** work with that projected target. **CustomDirection** exposes **Custom Vector (XY)**, and **RandomDirection** chooses a direction in the plane. Where available, **Spread Angle (Deg)** replaces cone divergence and spreads the strike to either side of its direction.

Use **Sorting Layer** and **Order in Layer** to place the ray in front of or behind sprites. Preview it through your orthographic Main Camera. See Section 2 for camera post-processing and Bloom setup.

> For smoother edges in 2D, enable High Quality Filtering in the Bloom override on your Global Volume. This helps remove the visible sawtooth edges around the ray.

The Ray Tab

Global

Loop Strike repeats discharges. Trigger Strike starts a discharge from the Inspector.

Origin & Strike Direction

Origin Transform defines the origin; if unassigned, the ray object's position is used.

Direction Mode	Behaviour
TowardsTarget	Aims towards Target Ground/Object
CustomDirection	Uses Custom Vector
RandomDirection	Uses random directions

Attach End to Target places the endpoint at the target. Continuous Tracking follows it during the strike; when disabled, each strike preserves its initially captured target position.

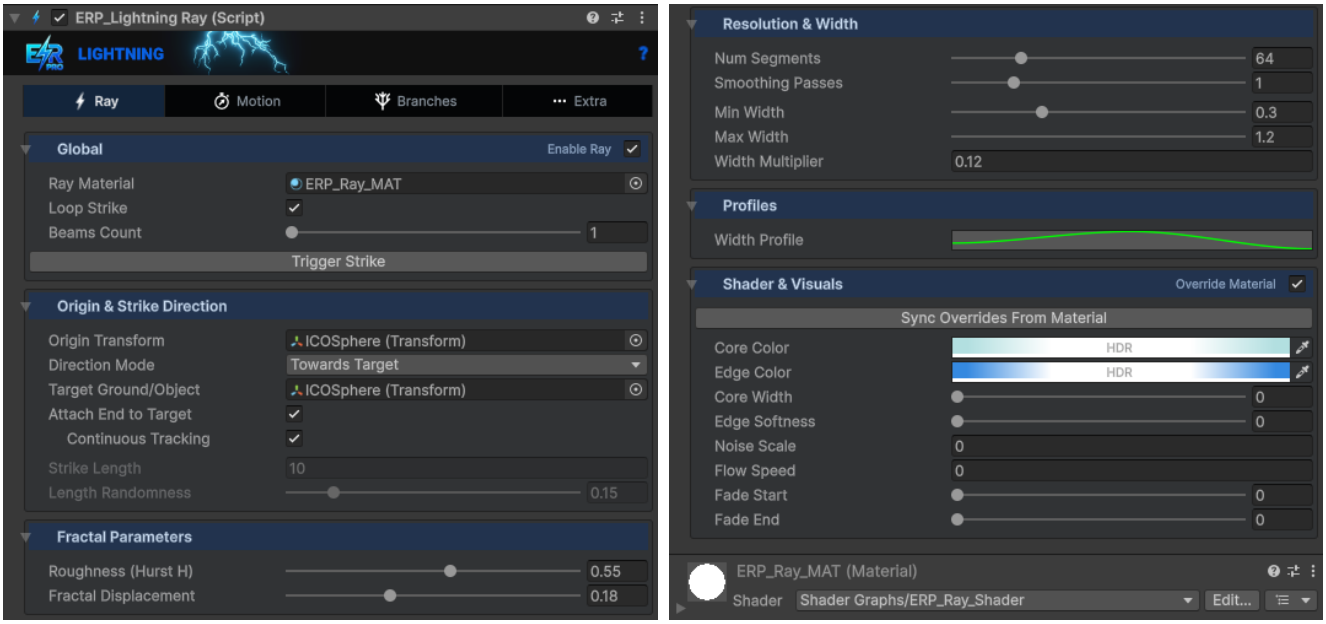
Snap Length to Target uses target distance without exact attachment. Cone Divergence varies direction, Strike Length sets distance and Length Randomness varies it. Cone and length variation can move the endpoint away from the target even with length snapping.

Custom Vector sets direction, not distance.

Fractal Parameters

Lower Roughness (Hurst H) produces more jagged detail; higher values produce smoother shapes. Fractal Displacement controls deviation relative to strike length.

Lightning: Ray tab reference

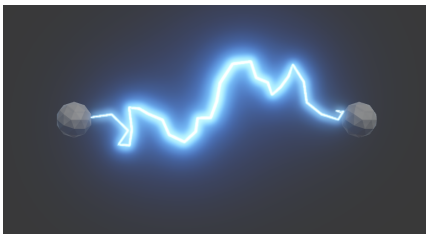


Ray tab, upper and lower portions. Setting values shown are an example configuration.

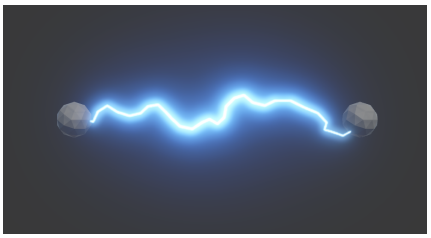
Control	Explanation
Beams Count	Sets the number of ribbons in a strike.
Loop Strike	Repeats strikes using the Motion tab timing.
Trigger Strike	Starts a strike manually.
Origin Transform	Assigns the transform from which the strike starts.
Direction Mode	Chooses a target-directed strike or a custom/random direction, where available.

Control	Explanation
Target Ground/Object	Assigns the destination for Towards Target mode.
Attach End to Target	Keeps the strike endpoint attached to the target.
Continuous Tracking	Updates an attached endpoint as its target moves.
Snap Length to Target	Uses the target distance for the strike length.
Cone Divergence (Deg)	Spreads directions within a cone.
Strike Length / Length Randomness	Sets strike length and its random variation.
Custom Vector	Defines the direction in Custom mode.
Roughness (Hurst H)	Controls fractal detail: lower values give rougher paths; higher values give smoother paths.
Fractal Displacement	Sets the strength of fractal deviation from the main path.
Enable Ray	Enables the effect and plays its growth or disappearance transition.
Ray Material	Assigns the material used to draw the ray ribbons.
Num Segments	Sets path subdivisions; more segments give finer geometry.
Smoothing Passes	Smooths the generated path; more passes soften sharp corners.
Min Width / Max Width	Sets the range of ribbon widths.
Width Multiplier	Scales the width range without changing its endpoints.
Width Profile	Shapes width along the ray from start to end.
Override Material	Applies component-specific shader values.
Sync Overrides From Material	Copies the assigned material values into the override controls.
Core Color / Edge Color	Sets the colours of the inner core and outer edges.
Core Width	Sets the proportion occupied by the bright inner core.
Edge Softness	Controls the softness of the ribbon edges.
Noise Scale	Scales the shader noise pattern.
Flow Speed	Sets the speed of animated shader noise.
Fade Start / Fade End	Controls fading at the respective endpoint.

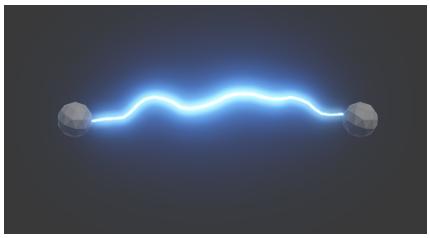
Roughness comparison



Roughness = 0.1
Fractal Displacement = 0.15

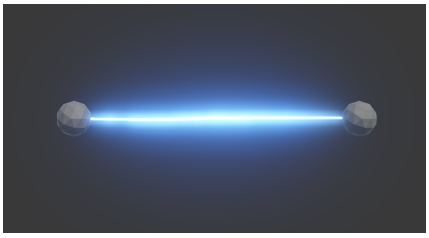


Roughness = 0.5
Fractal Displacement = 0.15

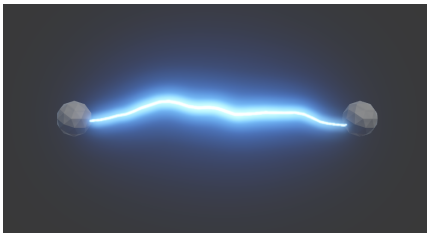


Roughness = 0.9
Fractal Displacement = 0.15

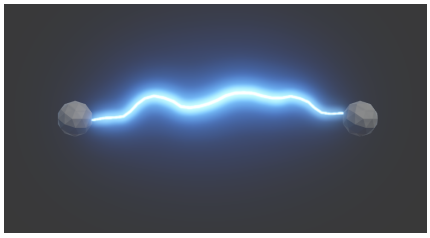
Fractal displacement comparison



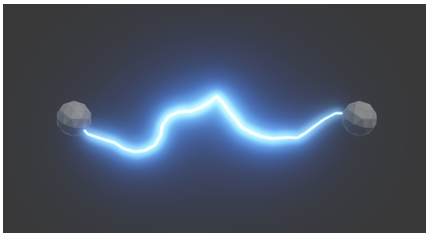
Fractal Displacement = 0.01
Roughness = 0.9



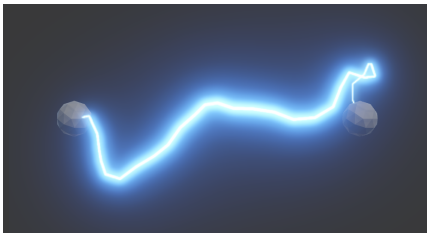
Fractal Displacement = 0.1
Roughness = 0.9



Fractal Displacement = 0.15
Roughness = 0.9



Fractal Displacement = 0.25
Roughness = 0.9



Fractal Displacement = 0.5
Roughness = 0.9

Lightning: Motion controls

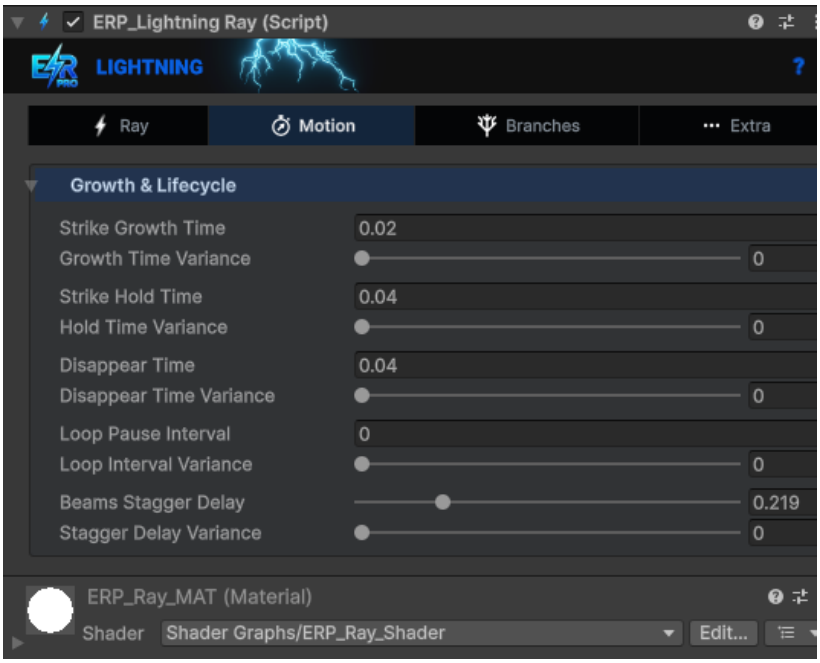


Figure 10. Lightning: Motion tab. Example settings.

Control	Explanation
Strike Growth Time / Growth Variance	Time the ray spends to grow from start to finish; variance adds proportional randomness.
Strike Hold Time / Hold Variance	Sets the fully formed duration; variance adds proportional randomness.
Disappear Time / Disappear Variance	Time the ray spends to disappear from start to finish; variance adds proportional randomness.
Loop Pause Interval / Loop Variance	Sets the pause between repeated strikes; variance adds proportional randomness.
Beams Stagger Delay / Stagger Variance	Sets delay between ribbons; variance adds proportional randomness.

All Variance controls add proportional randomness to their corresponding times; for example, 1 second with variance 0.2 varies approximately from 0.8 to 1.2 seconds.

Lightning: Branches controls

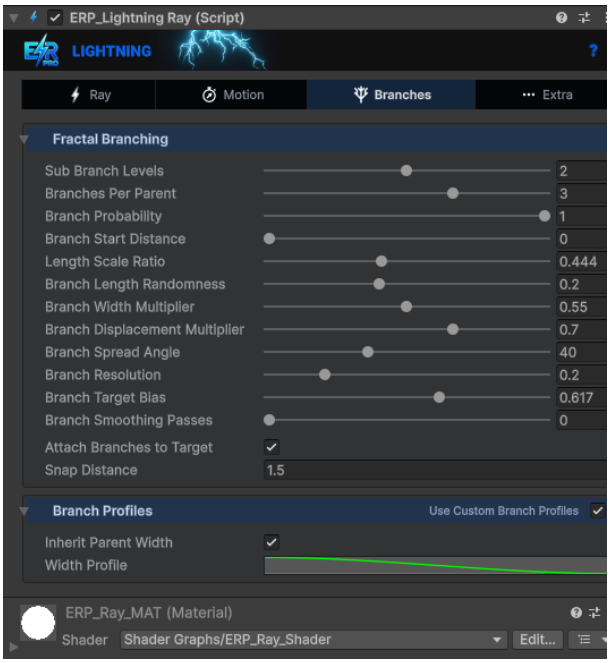


Figure 11. Lightning: Branches tab. Example settings.

Control	Explanation
Sub Branch Levels	Sets the number of recursive branch generations.
Branches Per Parent	Sets the number of candidate branches on each parent path.
Branch Width Multiplier	Scales branch widths relative to their parent.
Branch Displacement Multiplier	Scales branch path variation relative to its parent.
Branch Spread Angle / Bifurcation Spread (Deg)	Sets the angular spread away from the parent path.
Branch Resolution	Controls branch geometry detail relative to the parent.
Branch Target Bias	Biases branch direction towards the destination.
Branch Smoothing Passes	Smooths branch paths.
Use Custom Branch Profiles	Enables separate curve profiles for branches.
Inherit Parent Width	Uses the parent width at the branch origin.
Width Profile	Shapes width along each branch.
Branch Probability	Sets the chance that a candidate branch is created.
Branch Start Distance	Sets the starting position for branch generation along the parent.
Length Scale Ratio / Branch Length Randomness	Sets branch length relative to its parent and adds random variation.
Attach Branches to Target	Allows branch endpoints to attach to the destination.

Control	Explanation
Snap Distance	Sets the distance within which branch endpoints snap to the target, when available.

Lightning: Extra controls

See Section 6 for shared editor and rendering options.

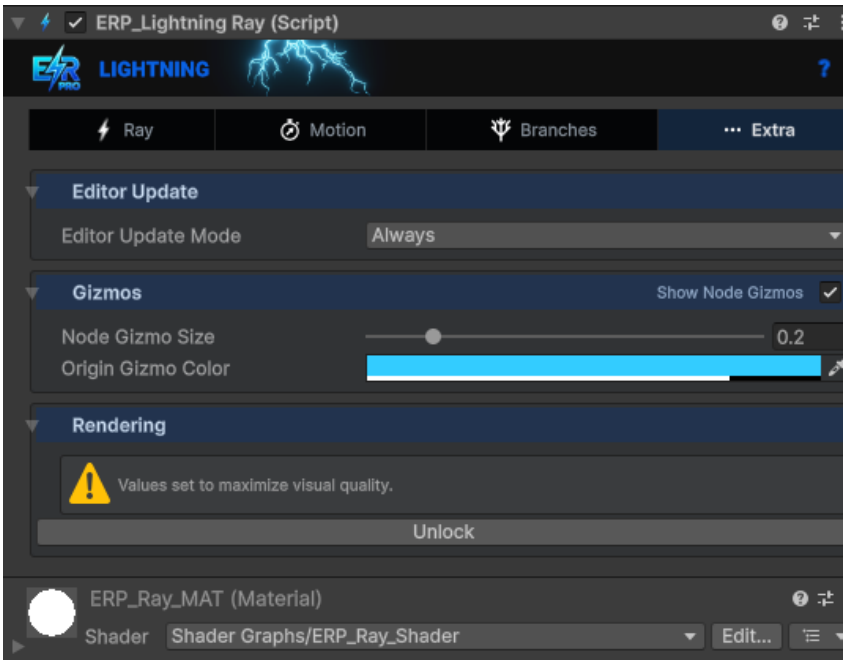


Figure 12. Lightning: Extra tab. Example settings.

Control	Explanation
Editor Update Mode	Chooses when the ray is updated in the editor.
Show Node Gizmos / Node Gizmo Size	Shows the origin marker and sets its size.
Origin Gizmo Color	Sets the origin-marker colour.
Rendering / Unlock	Unlocks the protected advanced rendering settings. Use the Scene view Gizmos toggle to show or hide guides.

9. OnSurface rays

OnSurface creates rays with a crawling head, trailing tail and an arching midpoint. See Section 6 for shared appearance controls.

Basic setup

1. Create an Empty GameObject
2. Add ERP_OnSurfaceRay
3. Choose NonDeforming or SkinnedMesh under Surface Mode
4. Assign your surface as described below

A non-deforming object can still move, rotate or scale.

OnSurface: visual setup

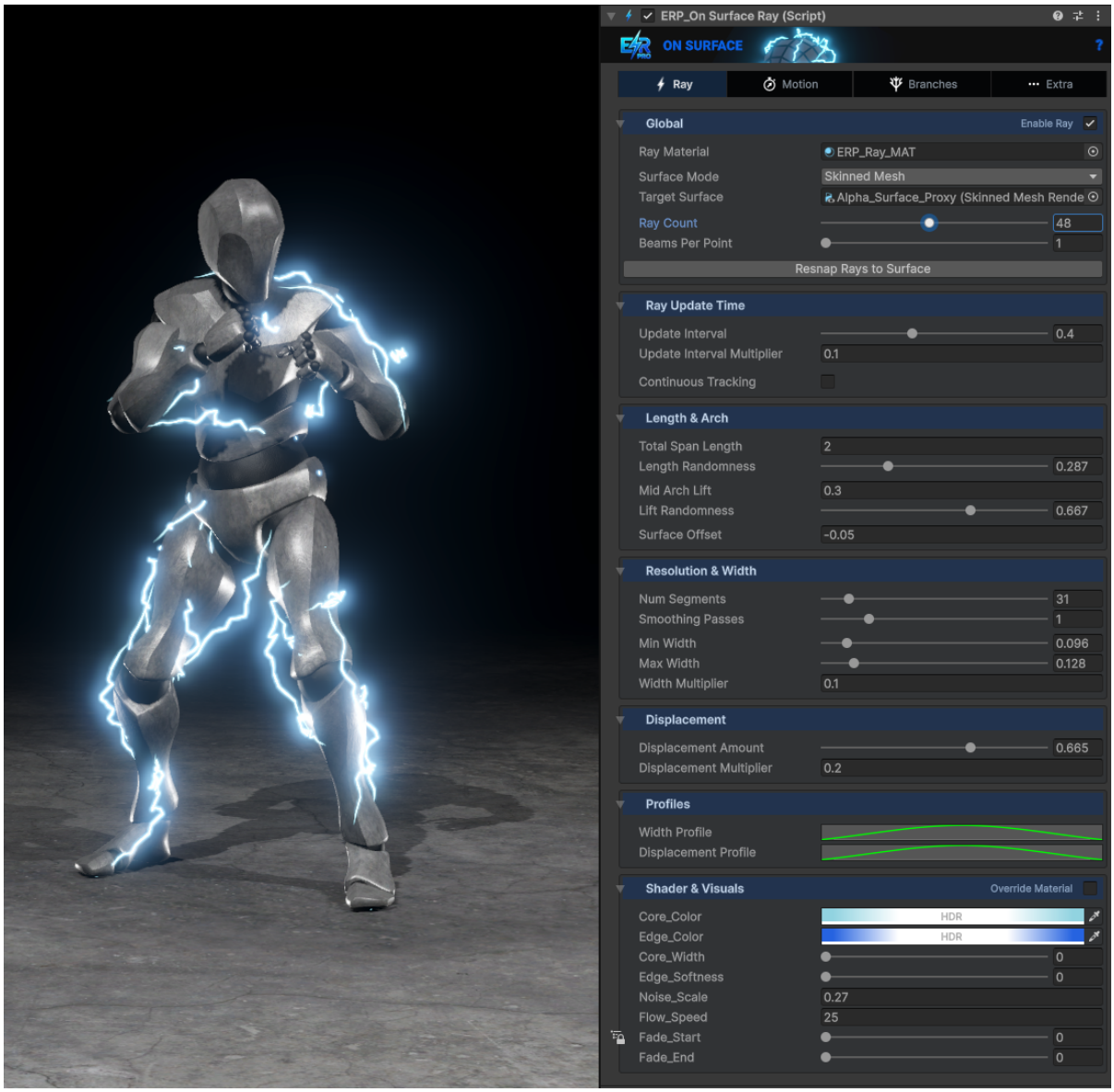


Figure 13. OnSurface visual setup

Non-deforming surfaces

Assign Target Surface and ensure it or its children have a Collider matching the intended surface. Parent the ray object to the target; use Reparent to Target if offered. Adjust length and movement to suit the object. Rays follow collision geometry.

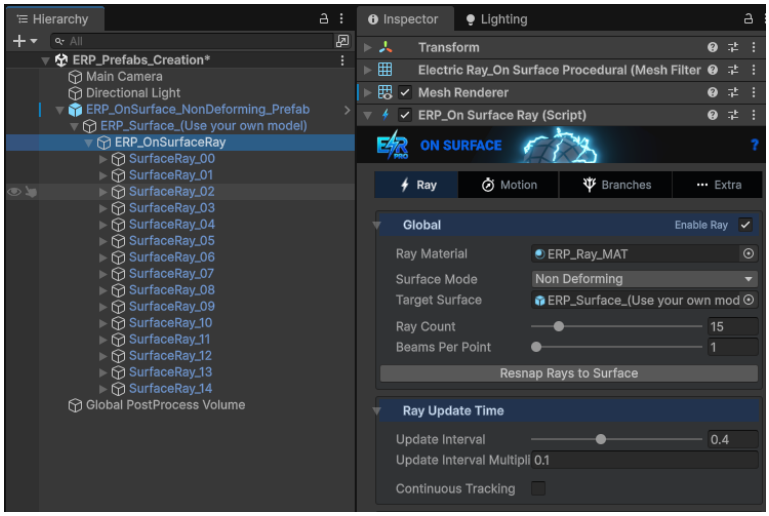


Figure 14. NonDeforming setup: the ray is a child of its target; Surface Mode and Target Surface are assigned.

Skinned meshes

Assign the SkinnedMeshRenderer to Target Surface. Enable Read/Write on the mesh if requested. ERP updates an internal collision surface; a separate Collider is unnecessary. Following deformation requires the source mesh to update.

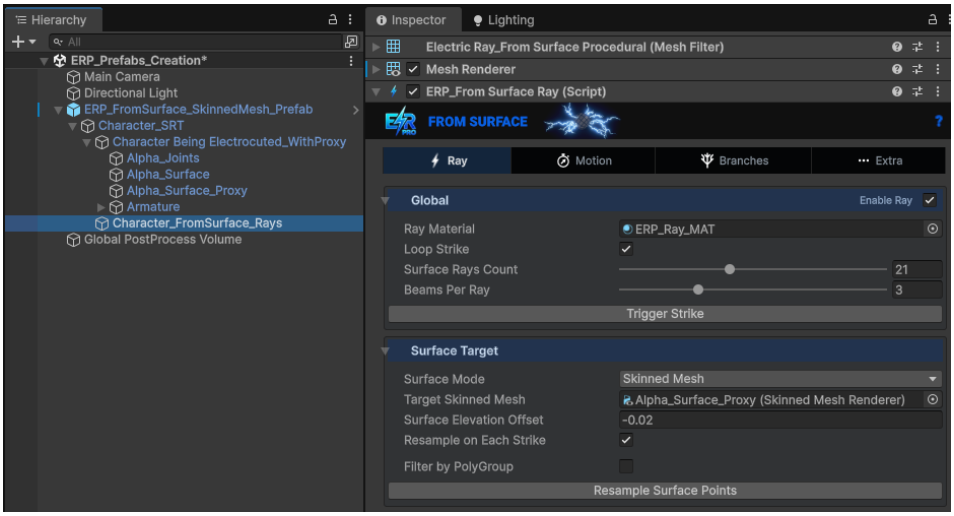


Figure 15. SkinnedMesh source assignment shown on FromSurface. For OnSurface, assign the SkinnedMeshRenderer to Target Surface.

New component defaults

These defaults apply to a newly added OnSurface component or when you use its component menu's **Reset** command. Existing scene components and prefabs retain their saved Inspector values until reset or edited. The screenshots in this chapter illustrate example configurations, not necessarily the defaults.

Controls	Default values
Surface Mode / Target Surface	NonDeforming / unassigned
Ray Count / Beams Per Point	1 / 1
Total Span Length / Length Randomness	1 / 0.25
Mid Arch Lift / Lift Randomness / Surface Offset	0.15 / 0.25 / 0.05
Update Interval / Multiplier / Continuous Tracking	0.4 / 0.1 / off
Growth Time / Disappear Time / Ray Stagger Delay	0.2 / 0.2 / 0.3
Crawl Speed / Speed Randomness	4 / 0.2
Turn Speed / Turn Speed Randomness	5 / 0.5
Heading Change / Heading Change Randomness	2 / 0.5
Head / Mid / Tail Sphere Radius	0.04 / 0.08 / 0.04
Noise Frequency / Frequency Randomness	7.11 / 0.25
Num Segments / Smoothing Passes	32 / 1
Min Width / Max Width / Width Multiplier	0.2 / 1 / 0.1
Displacement Amount / Displacement Multiplier	0.28 / 1
Sub Branch Levels / Branches Per Parent	0 / 2
Collider Bake Rate (Hz)	24

Requirement warnings and fixes

ERP checks requirements for the selected ray and surface mode, and displays a message beside the relevant Inspector setting. Read the message, then use its fix button when one is offered. Some requirements need manual setup. See Section 2 for the shared camera and Bloom setup check.

No Target Surface

> **!** In NonDeforming mode, an empty Target Surface slot shows NO TARGET SURFACE in the Inspector. Assign a GameObject with a Collider; the Collider may be on that object or one of its children. An empty slot does not produce the missing-Collider Console warning. Assigning a target is a manual setup step.

No Collider Found

OnSurface in NonDeforming mode needs a Collider to crawl, snap and track the surface. This warning applies only when a Target Surface is assigned but it and its children have no Collider. Add a suitable Collider to that target or its children. The Inspector error and editor Console warning remain for this invalid assignment. The warning shown below offers no automatic Collider fix; Resnap Rays to Surface refreshes placement after the Collider is ready.

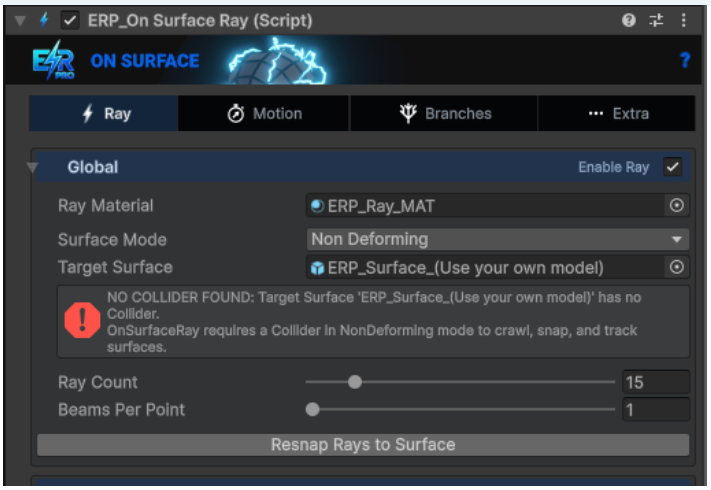


Figure 16. NonDeforming mode: missing Collider warning. Add the Collider manually.

Read/Write Disabled

In SkinnedMesh mode, the source mesh must allow CPU access. Without Read/Write, skinned tracking, barycentric coordinate calculations and dynamic collider baking will fail in builds. Click Enable Read/Write on [mesh name] when offered, or enable Read/Write in the model's Import Settings manually.

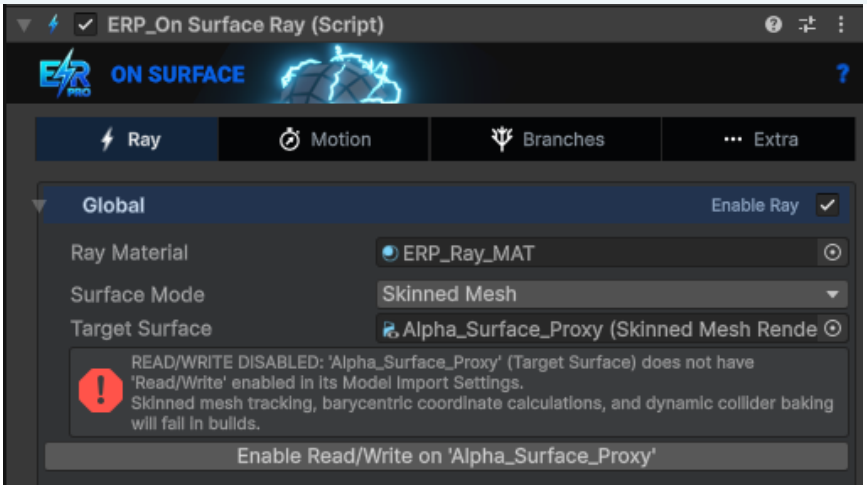


Figure 17. SkinnedMesh mode: Read/Write warning with an Enable Read/Write button.

The Ray Tab

Global

Ray Count sets crawling rays; Beams Per Point sets ribbons per ray. Resnap Rays to Surface resets their placement.

Ray Update Time

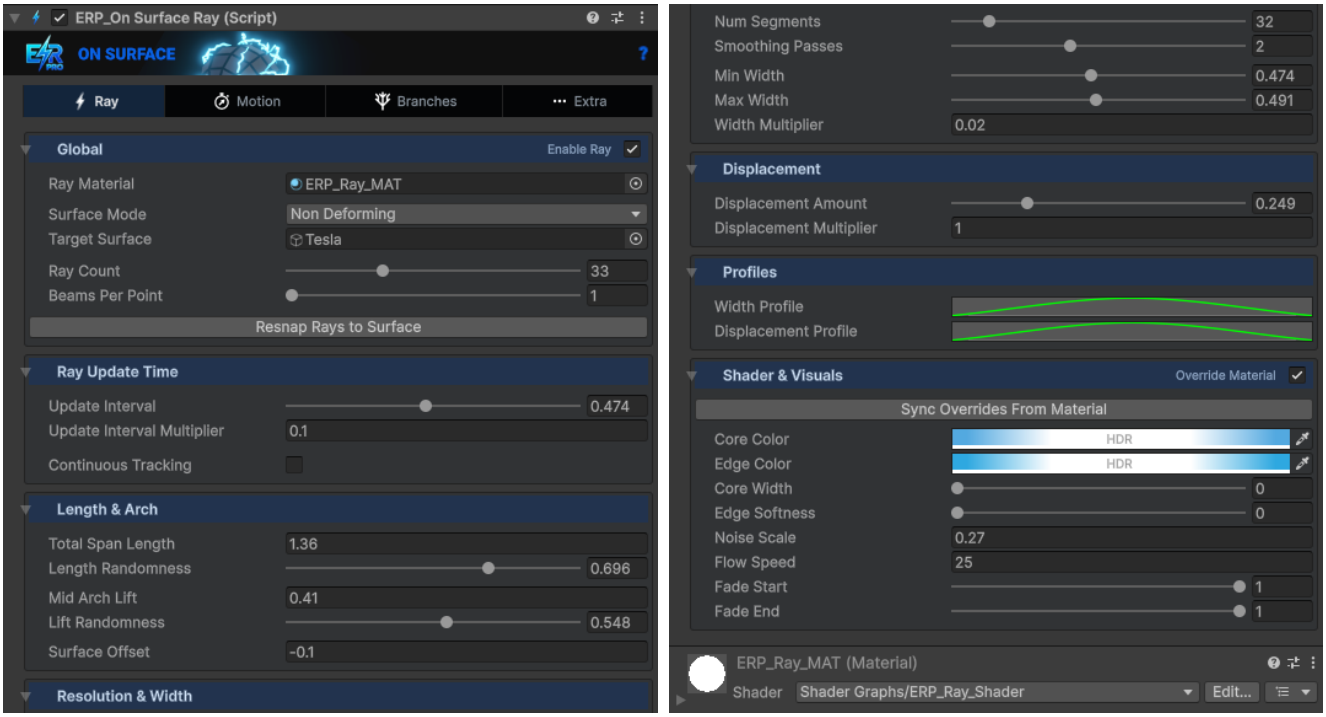
Update Interval × Update Interval Multiplier sets random shape timing. Continuous Tracking updates alignment every frame while preserving noise seeds between intervals.

Length & Arch

Setting	Description
Total Span Length	Surface distance from head to tail
Length Randomness	Span variation
Mid Arch Lift	Midpoint elevation
Lift Randomness	Arch variation
Surface Offset	Anchor offset along the surface normal

Midpoint and tail follow the head's path history. Noise and displacement can move the visible ribbon away from these anchors.

OnSurface: Ray tab reference

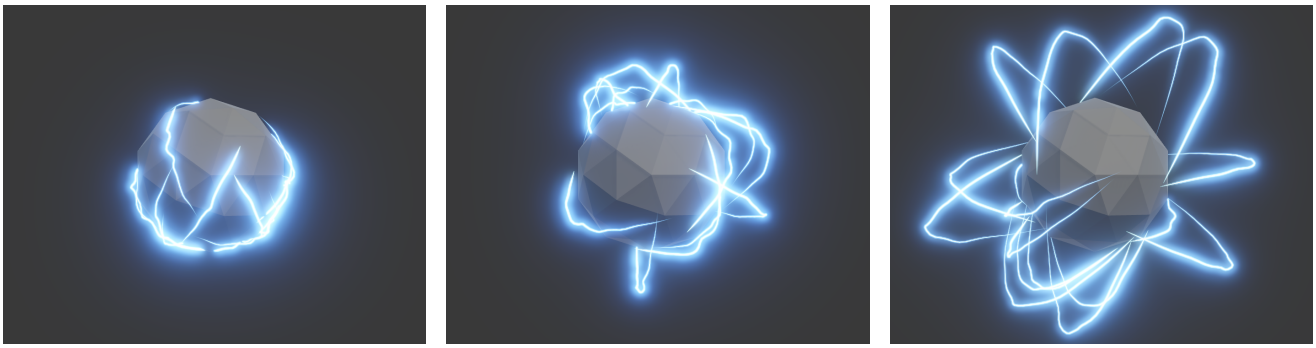


Ray tab, upper and lower portions. Setting values shown are an example configuration.

Control	Explanation
Surface Mode	Chooses a non-deforming mesh or animated skinned-mesh workflow.
Target Surface / Target Skinned Mesh	Assigns the surface source appropriate to the selected mode.
Ray Count	Sets the number of separate paths on the surface.
Beams Per Point	Sets the number of ribbons for each surface path.

Control	Explanation
Resnap Rays to Surface	Resets the ray placement on the assigned surface.
Update Interval / Update Interval Multiplier	Sets the interval between random path updates; the multiplier scales that interval.
Continuous Tracking	Keeps control points following the changing surface.
Total Span Length / Length Randomness	Sets surface-path length and its random variation.
Mid Arch Lift / Lift Randomness	Raises the midpoint into an arch and varies that lift.
Surface Offset	Offsets the path from the surface to reduce intersections.
Displacement Amount / Displacement Multiplier	Sets and scales the amount of path variation.
Displacement Profile	Shapes displacement along the path.
Enable Ray	Enables the effect and plays its growth or disappearance transition.
Ray Material	Assigns the material used to draw the ray ribbons.
Num Segments	Sets path subdivisions; more segments give finer geometry.
Smoothing Passes	Smooths the generated path; more passes soften sharp corners.
Min Width / Max Width	Sets the range of ribbon widths.
Width Multiplier	Scales the width range without changing its endpoints.
Width Profile	Shapes width along the ray from start to end.
Override Material	Applies component-specific shader values.
Sync Overrides From Material	Copies the assigned material values into the override controls.
Core Color / Edge Color	Sets the colours of the inner core and outer edges.
Core Width	Sets the proportion occupied by the bright inner core.
Edge Softness	Controls the softness of the ribbon edges.
Noise Scale	Scales the shader noise pattern.
Flow Speed	Sets the speed of animated shader noise.
Fade Start / Fade End	Controls fading at the respective endpoint.

Mid Arch Lift comparison



Mid Arch Lift = 0.5 | Mid Arch Lift = 1.5 | Mid Arch Lift = 3

OnSurface: Motion controls

Use Enable Ray for transitions. Ray Stagger Delay is shown when growth or disappearance time is non-zero. Smaller head and tail noise radii give tighter surface attachment.

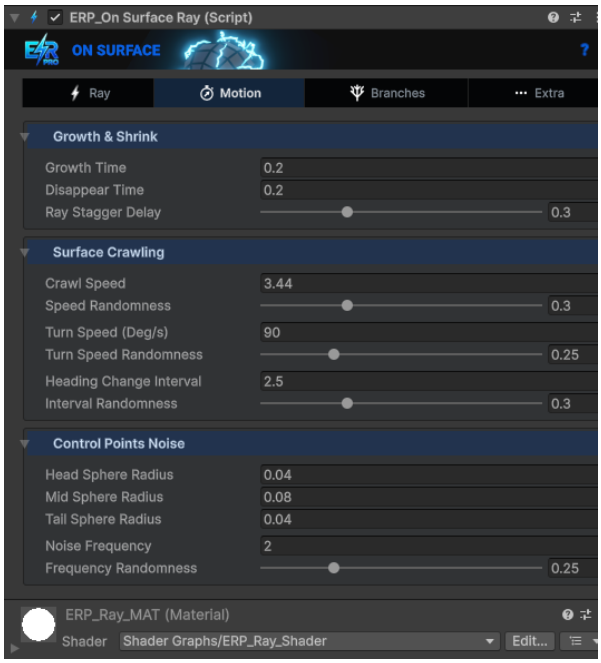


Figure 18. OnSurface: Motion tab. Example settings.

Control	Explanation
Growth Time	Time the ray spends to grow from start to finish
Disappear Time	Time the ray spends to disappear from start to finish
Ray Stagger Delay	Adds timing differences between ribbons.
Crawl Speed / Speed Randomness	Sets surface movement speed and its random variation.
Turn Speed / Turn Speed Randomness	Controls steering response and its random variation.

Control	Explanation
Heading Change / Heading Change Randomness	Controls how frequently a new heading is chosen and varies its interval. Higher values change heading more often.
Head / Mid / Tail Sphere Radius	Sets positional noise around each respective control point.
Noise Frequency / Frequency Randomness	Sets the rate of noise changes and its variation.

OnSurface: Branches controls

Branches are not independently crawling surface rays.

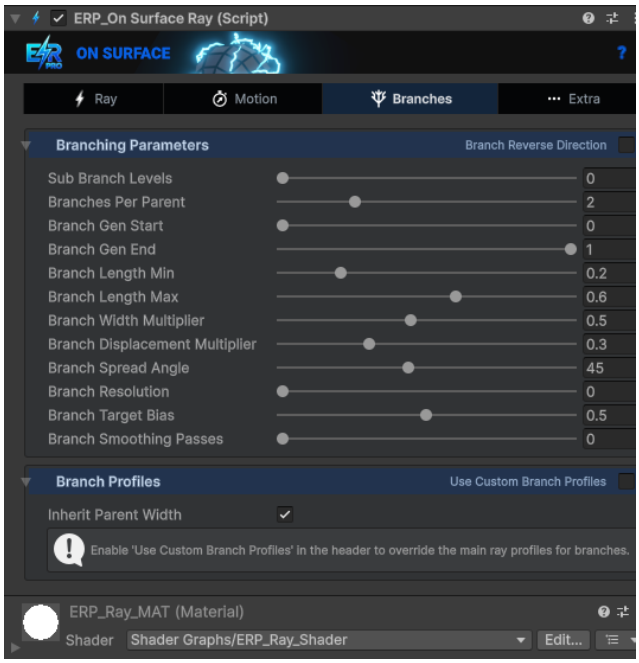


Figure 19. OnSurface: Branches tab. Example settings.

Control	Explanation
Sub Branch Levels	Sets the number of recursive branch generations.
Branches Per Parent	Sets the number of candidate branches on each parent path.
Branch Width Multiplier	Scales branch widths relative to their parent.
Branch Displacement Multiplier	Scales branch path variation relative to its parent.
Branch Spread Angle / Bifurcation Spread (Deg)	Sets the angular spread away from the parent path.
Branch Resolution	Controls branch geometry detail relative to the parent.
Branch Target Bias	Biases branch direction towards the destination.
Branch Smoothing Passes	Smooths branch paths.
Use Custom Branch Profiles	Enables separate curve profiles for branches.

Control	Explanation
Inherit Parent Width	Uses the parent width at the branch origin.
Width Profile	Shapes width along each branch.
Branch Reverse Direction	Reverses the branch direction along the parent.
Branch Gen Start / End	Limits where along the parent branches can originate.
Branch Length Min / Max	Sets the permitted branch-length range.
Displacement Profile	Shapes variation along each branch.

OnSurface: Extra controls

Higher Collider Bake Rate values follow deformation more closely; lower values reduce work but may lag rapid movement. Use a low-poly source where possible; approximately 2,500 triangles or fewer is recommended for this workflow. Actual performance depends on the scene and hardware.

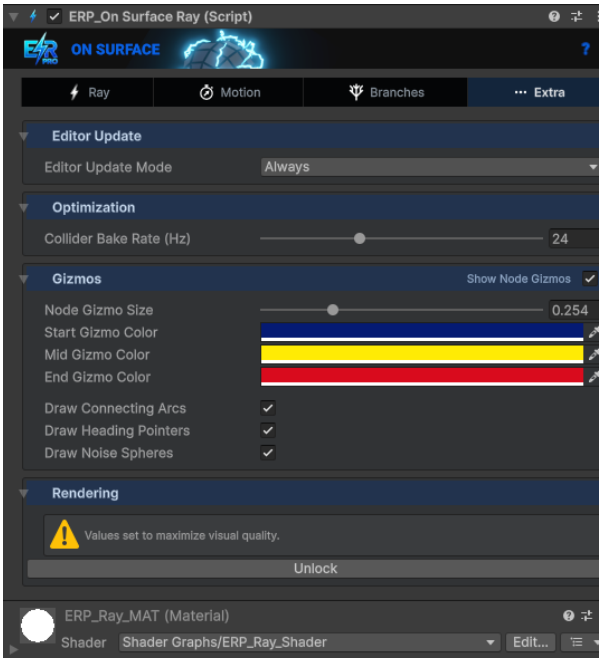


Figure 20. OnSurface: Extra tab. Example settings.

Control	Explanation
Editor Update Mode	Chooses when the ray is updated in the editor.
Collider Bake Rate (Hz)	Sets how often skinned surface collision data is refreshed.
Show Node Gizmos / Node Gizmo Size	Shows control-point markers and sets their size.
Start / Mid / End Gizmo Color	Sets the colour of each marker.
Draw Connecting Arcs	Shows guides connecting surface control points.
Draw Heading Pointers	Shows movement-heading guides.

Control	Explanation
Draw Noise Spheres	Shows the control-point noise regions.
Rendering / Unlock	Unlocks the protected advanced rendering settings. Use the Scene view Gizmos toggle to show or hide guides.

10. FromSurface rays

FromSurface samples mesh points and emits electric rays from them. Sources can move or deform. See Section 6 for shared appearance controls.

Basic setup

1. Create an Empty GameObject
2. Add ERP_FromSurfaceRay
3. Choose NonDeforming or SkinnedMesh under Surface Mode
4. Assign the source described below
5. Adjust length and appearance to suit the object

For NonDeforming, Target Surface must provide a MeshFilter with a mesh, on itself or through its children. For SkinnedMesh, assign Target Skinned Mesh. Enable mesh Read/Write if requested. No Collider is required.

FromSurface: visual setup

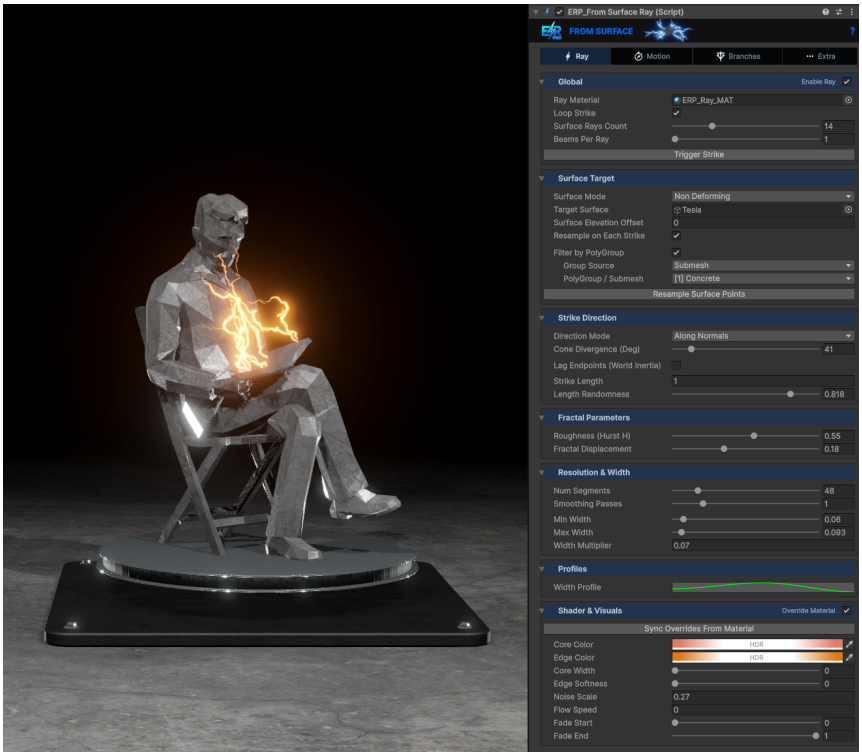


Figure 21. FromSurface visual setup

Requirement warning

No Mesh Filter Found

In NonDeforming mode, FromSurface needs a valid MeshFilter with an assigned mesh on the target or its children. If the Inspector shows No Mesh Filter Found, assign a suitable mesh source or add a MeshFilter and assign its mesh. No automatic fix is offered in this warning. Resample Surface Points refreshes sampling after the source is valid.

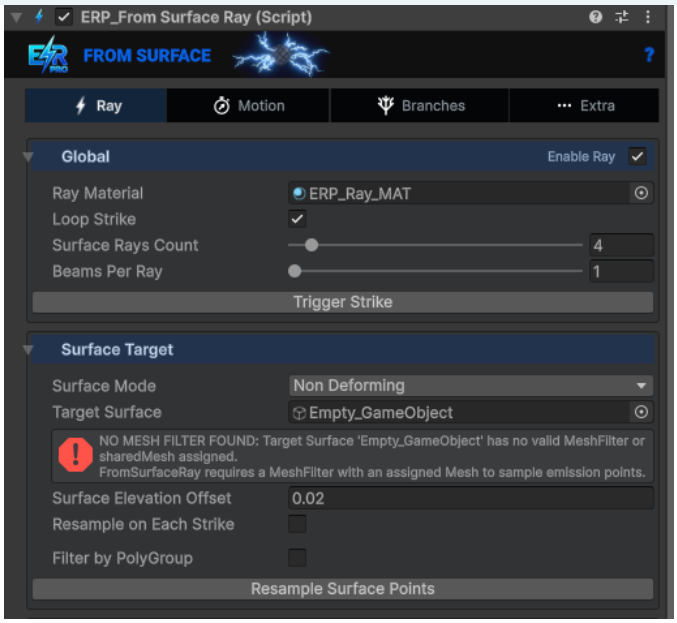


Figure 22. FromSurface needs a MeshFilter with an assigned mesh. Assign a valid source manually.

The Ray Tab

Global

Surface Rays Count sets sampled emission points; Beams Per Ray sets beams per point. Loop Strike repeats activity and Trigger Strike starts a discharge.

Surface Target

Surface Elevation Offset moves origins along normals. Resample on Each Strike selects new positions for successive strikes; disable it to reuse positions while following source movement. Resample Surface Points manually selects new positions.

Filter by PolyGroup

Enable filtering and choose Group Source.

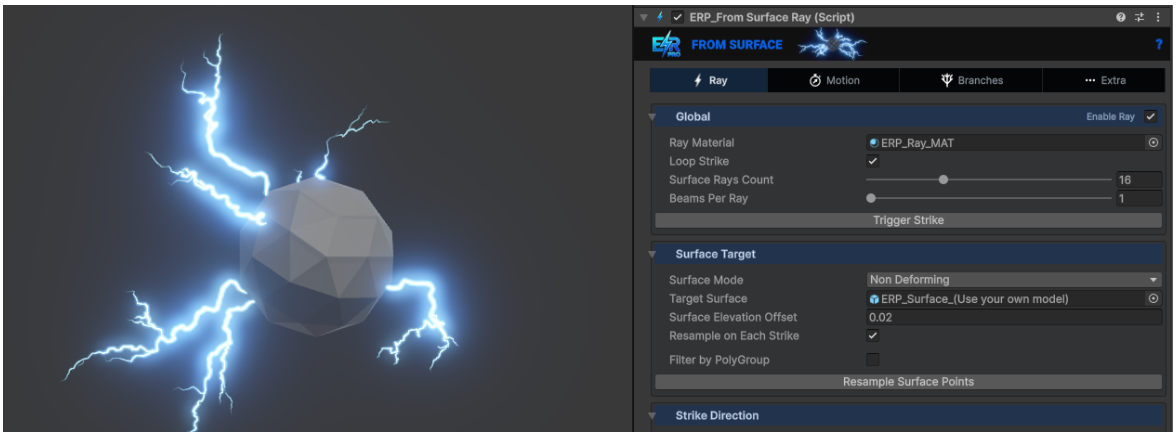
- **Submesh** selects a region using PolyGroup / Submesh or Submesh Index

- **VertexColor** uses a Color Channel and Color Threshold

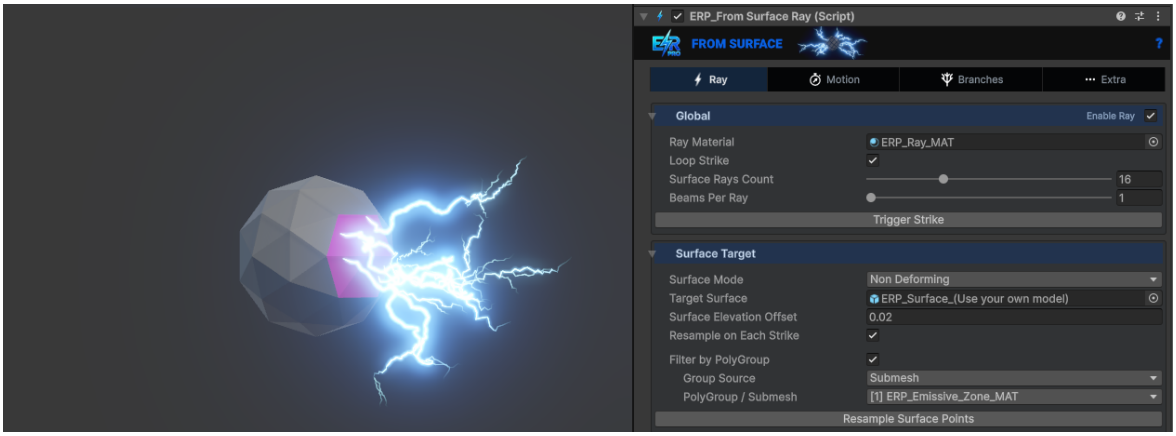
Submeshes can be prepared through separate face material assignments in modelling software. Vertex-colour selection uses the average channel value of each triangle's three vertices and selects whole triangles.

If filtering selects no triangles, ERP falls back to the whole mesh. Ensure the chosen region contains eligible triangles when emission must stay restricted.

PolyGroup filtering comparison



Filter by PolyGroup disabled



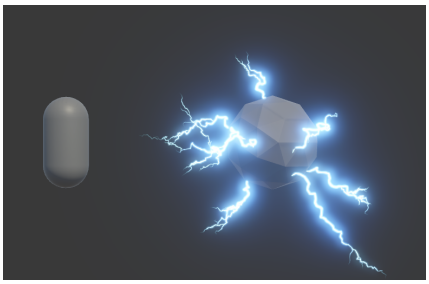
Emission restricted to the pink material region

Strike Direction

Mode	Behaviour
AlongNormals	Uses sampled surface normals
TowardsTarget	Aims towards Target Ground/Object
Custom	Uses Custom Vector

Attach End to Target forces exact attachment. Snap Length to Target uses target distance without forcing attachment. Otherwise Cone Divergence varies direction, Strike Length sets distance and Length Randomness varies distance.

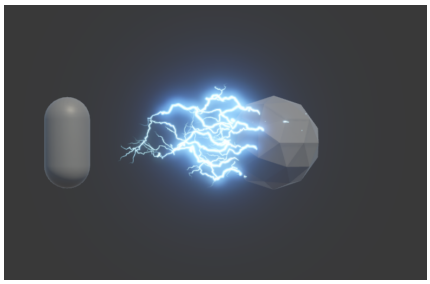
FromSurface direction modes



Along Normals



Custom direction: positive Y



Towards Target: capsule

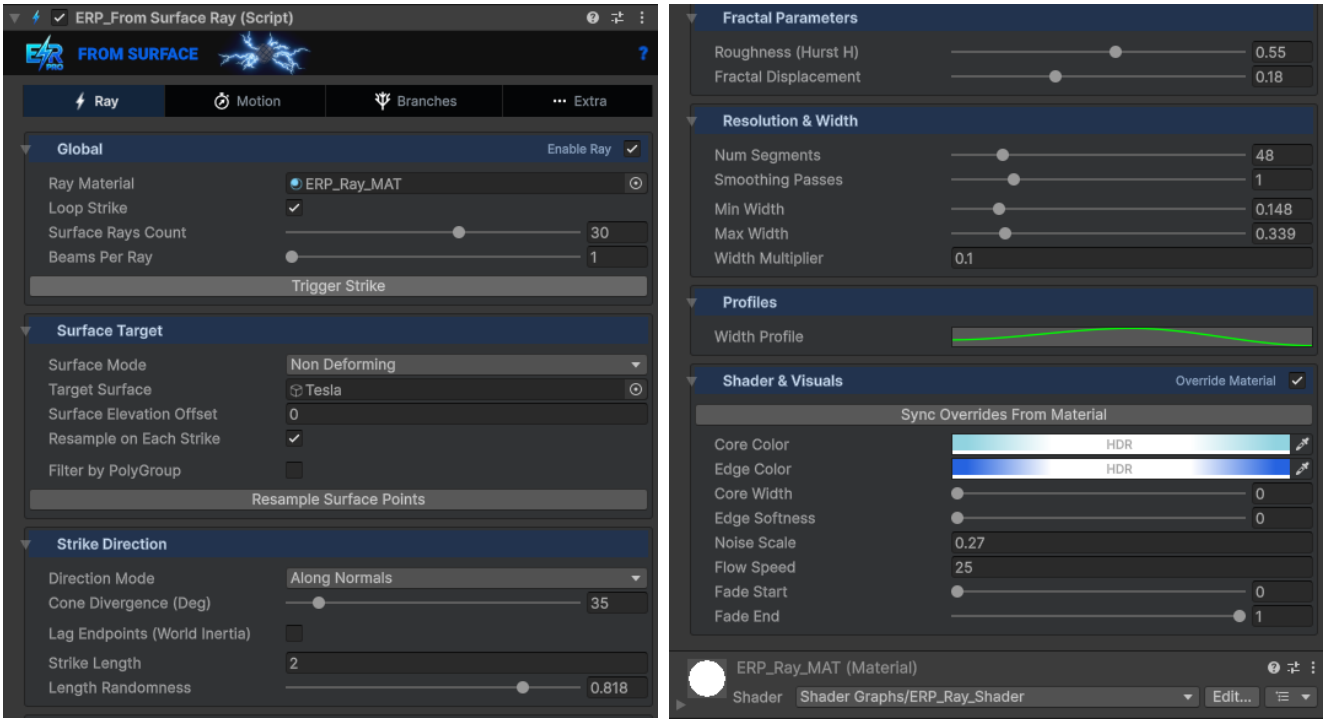
Lag Endpoints (World Inertia)

Enable endpoint lag for stepped trailing behaviour. Step Interval Min / Max sets catch-up timing. Step Snap Ratio of 1 catches up instantly at each step; smaller values catch up partially.

Fractal Parameters

Roughness and Fractal Displacement work as described for Lightning.

FromSurface: Ray tab reference



Ray tab, upper and lower portions. Setting values shown are an example configuration.

Control	Explanation
Loop Strike / Trigger Strike	Repeats surface discharges or starts one manually.
Surface Rays Count	Sets the number of sampled emission points.
Beams Per Ray	Sets ribbons emitted from each point.

Control	Explanation
Surface Mode	Chooses a non-deforming mesh or animated skinned-mesh workflow.
Target Surface / Target Skinned Mesh	Assigns the surface source appropriate to the selected mode.
Surface Elevation Offset	Moves emission points outward from the surface.
Resample on Each Strike	Chooses new surface points for each discharge.
Resample Surface Points	Refreshes the sampled emission positions immediately.
Filter by PolyGroup	Restricts emission to a chosen mesh region.
Group Source	Selects submesh membership or vertex colours as the region source.
Submesh Index	Selects the submesh used for filtering.
PolyGroup channel / threshold	Selects the vertex-colour channel and threshold used to include triangles.
Average Triangle	Uses the average vertex value for triangle filtering when enabled.
Direction Mode	Chooses a target-directed strike or a custom/random direction, where available.
Target Ground/Object	Assigns the destination for Towards Target mode.
Attach End to Target	Keeps the strike endpoint attached to the target.
Continuous Tracking	Updates an attached endpoint as its target moves.
Snap Length to Target	Uses the target distance for the strike length.
Cone Divergence (Deg)	Spreads directions within a cone.
Strike Length / Length Randomness	Sets strike length and its random variation.
Custom Vector	Defines the direction in Custom mode.
Along Normals	Emits in the direction of each sampled surface normal.
Lag Endpoints (World Inertia)	Allows endpoints to lag behind a moving source.
Step Interval Min / Max	Sets the random interval between endpoint catch-up steps.
Step Snap Ratio	Sets how far the endpoint catches up during each step.
Roughness (Hurst H)	Controls fractal detail: lower values give rougher paths; higher values give smoother paths.
Fractal Displacement	Sets the strength of fractal deviation from the main path.
Enable Ray	Enables the effect and plays its growth or disappearance transition.
Ray Material	Assigns the material used to draw the ray ribbons.

Control	Explanation
Num Segments	Sets path subdivisions; more segments give finer geometry.
Smoothing Passes	Smooths the generated path; more passes soften sharp corners.
Min Width / Max Width	Sets the range of ribbon widths.
Width Multiplier	Scales the width range without changing its endpoints.
Width Profile	Shapes width along the ray from start to end.
Override Material	Applies component-specific shader values.
Sync Overrides From Material	Copies the assigned material values into the override controls.
Core Color / Edge Color	Sets the colours of the inner core and outer edges.
Core Width	Sets the proportion occupied by the bright inner core.
Edge Softness	Controls the softness of the ribbon edges.
Noise Scale	Scales the shader noise pattern.
Flow Speed	Sets the speed of animated shader noise.
Fade Start / Fade End	Controls fading at the respective endpoint.

FromSurface: Motion controls

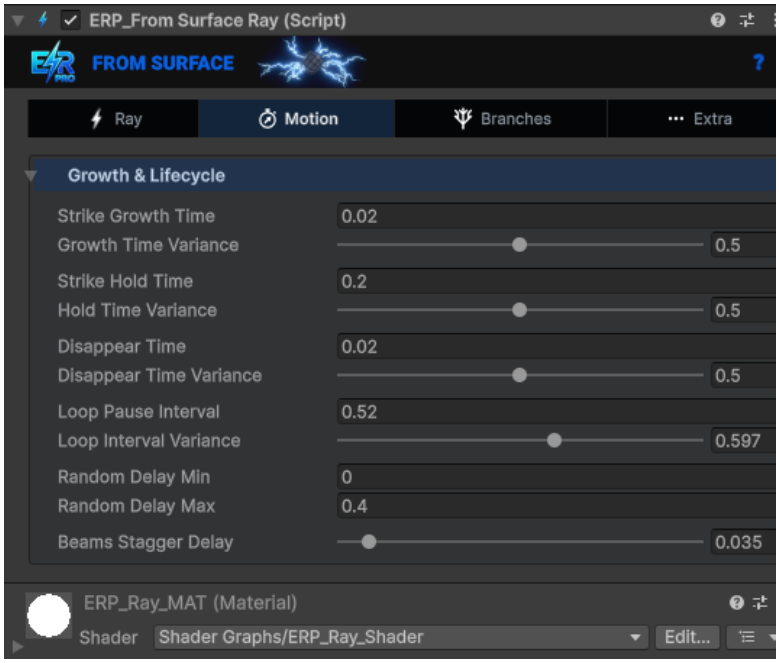


Figure 23. FromSurface: Motion tab. Example settings.

Control	Explanation
Strike Growth Time / Growth Variance	Time the ray spends to grow from start to finish; variance adds proportional randomness.

Control	Explanation
Strike Hold Time / Hold Variance	Sets the fully formed duration; variance adds proportional randomness.
Disappear Time / Disappear Variance	Time the ray spends to disappear from start to finish; variance adds proportional randomness.
Loop Pause Interval / Loop Variance	Sets the pause between repeated strikes; variance adds proportional randomness.
Beams Stagger Delay / Stagger Variance	Sets delay between ribbons; variance adds proportional randomness.
Random Delay Min / Max	Sets the random start-delay range for surface rays.

All Variance controls add proportional randomness to their corresponding times; for example, 1 second with variance 0.2 varies approximately from 0.8 to 1.2 seconds.

FromSurface: Branches controls

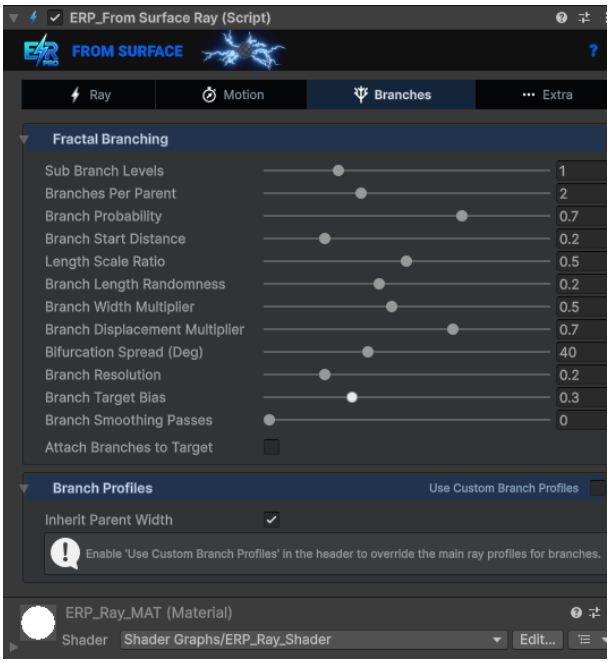


Figure 24. FromSurface: Branches tab. Example settings.

Control	Explanation
Sub Branch Levels	Sets the number of recursive branch generations.
Branches Per Parent	Sets the number of candidate branches on each parent path.
Branch Width Multiplier	Scales branch widths relative to their parent.
Branch Displacement Multiplier	Scales branch path variation relative to its parent.
Branch Spread Angle / Bifurcation Spread (Deg)	Sets the angular spread away from the parent path.
Branch Resolution	Controls branch geometry detail relative to the parent.

Control	Explanation
Branch Target Bias	Biases branch direction towards the destination.
Branch Smoothing Passes	Smooths branch paths.
Use Custom Branch Profiles	Enables separate curve profiles for branches.
Inherit Parent Width	Uses the parent width at the branch origin.
Width Profile	Shapes width along each branch.
Branch Probability	Sets the chance that a candidate branch is created.
Branch Start Distance	Sets the starting position for branch generation along the parent.
Length Scale Ratio / Branch Length Randomness	Sets branch length relative to its parent and adds random variation.
Attach Branches to Target	Allows branch endpoints to attach to the destination.
Snap Distance	Sets the distance within which branch endpoints snap to the target, when available.

FromSurface: Extra controls

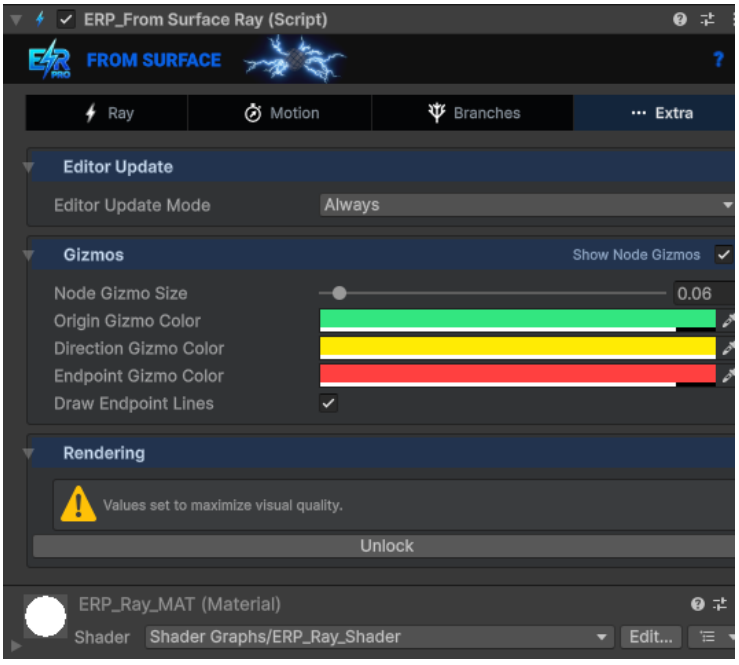


Figure 25. FromSurface: Extra tab. Example settings.

Control	Explanation
Editor Update Mode	Chooses when the ray is updated in the editor.
Show Node Gizmos / Node Gizmo Size	Shows emission markers and sets their size.

Control	Explanation
Origin / Direction / Endpoint Gizmo Color	Sets the colours of the respective guides.
Draw Endpoint Lines	Shows guides connecting origins and endpoints.
Rendering / Unlock	Unlocks the protected advanced rendering settings. Use the Scene view Gizmos toggle to show or hide guides.

11. Materials and appearance

ERP_Ray_MAT uses the supplied URP Shader Graph shader, combining a coloured core, softer edges and animated noise. Bloom provides surrounding glow.



You can use your own material, but this section will be hidden in the Inspector as it relies on the ERP_Ray_Mat provided by default.

Material settings and instance overrides

Override Material is enabled by default to avoid accidentally changing the shared material. Changes affect the selected component.

- Use overrides for independent appearance

- Disable overrides to edit the shared material and affect all its users

Sync Overrides From Material copies current material values into the component.

Colours, core and edges

Core Color and Edge Color support HDR values. Adjust their intensity and Bloom together. Core Width and Edge Softness shape appearance within the ribbon rather than changing its geometry width.

Core Width: endpoints of the range



Core Width = 0
Edge Softness = 1



Core Width = 1
Edge Softness = 1

Edge Softness with Core Width 0.5



Edge Softness = 0
Core Width = 0.5



Edge Softness = 0.5
Core Width = 0.5

Edge Softness with Core Width 1



Edge Softness = 0
Core Width = 1



Edge Softness = 1
Core Width = 1

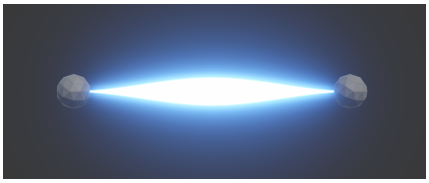
> If both Core Width and Edge Softness are 0, the ray collapses to a single line

Noise and flow

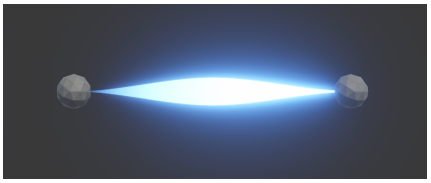
Noise Scale changes the pattern scale; Flow Speed changes animation speed. Shader noise is separate from geometry displacement and shape updates.

Endpoint fading

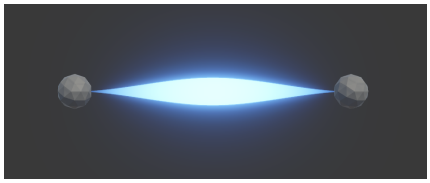
Fade Start and Fade End soften appearance along the ray. Combine them with a Width Profile for both fading and geometric tapering.



Fade Start = 0
Fade End = 0



Fade Start = 1
Fade End = 0



Fade Start = 1
Fade End = 1

Bloom and brightness

HDR intensity controls material brightness. Bloom Threshold selects contributing brightness and Bloom Intensity controls glow strength. Judge the result in the Game view.

12. Exploring SamplesScene

SamplesScene provides configurations and practical examples. Enter Play mode to use its selection interface; effects also animate in the editor.

Selecting an example

Select a category, subcategory and individual example.

Category	Subcategories
PointToPoint	Three-point rays and lightning examples
Lightning	Point-to-point strikes and cloud examples
FromSurface	Non-deforming and skinned mesh
OnSurface	Non-deforming and skinned mesh

The initial selection is OnSurface → SkinnedMesh. Use the ray toggle button to enable or disable the selected effect.



Figure 26. SamplesScene with an active example. Choose category, subcategory and example using the upper-right controls; toggle the ray at lower right.

Inspecting a configuration

Select the active ray in the Hierarchy to inspect settings. Compare configurations and refer to the component chapters. Copy Inspector settings changed during Play mode before leaving it if you want to keep them.

13. Using ERP from scripts

Use the namespace KampaTools.ElectricRays.Pro. Assign component references in the Inspector. Examples assume a configured scene effect.

Enabling and disabling rays

All components expose EnableRay. Keep the component active for lifecycle processing.

Save as **ElectricConnectionControl.cs**:

```
using UnityEngine;
using KampaTools.ElectricRays.Pro;

public class ElectricConnectionControl : MonoBehaviour
{
    [SerializeField] private ERP_PointToPointRay ray;

    public void TurnOn()
    {
        if (ray != null) ray.EnableRay = true;
    }

    public void TurnOff()
    {
        if (ray != null) ray.EnableRay = false;
    }
}
```

Attach the script and assign the ray. Call its methods from gameplay code or UnityEvents. Change the component type to use the same pattern with other rays.

Triggering strikes

Disable Loop Strike for manual control. Save as **LightningStrikeControl.cs**:

```
using UnityEngine;
using KampaTools.ElectricRays.Pro;

public class LightningStrikeControl : MonoBehaviour
{
    [SerializeField] private ERP_LightningRay ray;

    public void Strike()
    {
        if (ray != null) ray.TriggerStrike();
    }
}
```

Assign the Lightning component and call Strike() from a gameplay event. Change its type to ERP_FromSurfaceRay for surface discharges.

Moving endpoints

Move assigned constraint targets through gameplay code. Unconstrained PointToPoint nodes are accessible as StartTransform, MidTransform and EndTransform. Auto Mid Point and Follow Target can affect manual midpoint positioning.

```
// ray is an assigned ERP_PointToPointRay reference.
public void MoveEndpoints(Vector3 start, Vector3 end)
{
    if (ray == null) return;
    if (ray.StartTransform != null)
        ray.StartTransform.position = start;
    if (ray.EndTransform != null)
        ray.EndTransform.position = end;
}
```

Changing settings

For Lightning, ray.HoldTime = 0.2f changes hold duration and ray.ContinuousTracking = false preserves the captured target position for each attached discharge. Set lifecycle values before the next strike.

```
// ray is an assigned ERP_LightningRay reference.
public void ConfigureAndStrike()
{
    if (ray == null) return;
    ray.HoldTime = 0.2f;
    ray.ContinuousTracking = false;
    ray.TriggerStrike();
}
```

Surface methods

OnSurface: **ResnapAllToSurface()** resets surface placement.

FromSurface: **ResampleSurfacePoints()** selects new positions. Call **InvalidateTopologyCache()** first when changing topology or filtering configuration.

```
// Assigned ERP_OnSurfaceRay and ERP_FromSurfaceRay references.
public void RefreshSurfaceEffects(bool topologyChanged)
{
    if (onSurfaceRay != null)
        onSurfaceRay.ResnapAllToSurface();

    if (fromSurfaceRay != null)
    {
        if (topologyChanged)
            fromSurfaceRay.InvalidateTopologyCache();
        fromSurfaceRay.ResampleSurfacePoints();
    }
}
```

Component	API	Purpose
All	EnableRay	Activation
All	SyncOverridesFromMaterial(Material)	Copy shader values
PointToPoint	AutoMidPointOffset	Read/write midpoint offset
Lightning / FromSurface	TriggerStrike(), Loop	Trigger and repetition
Lightning	ContinuousTracking	Attached-strike tracking
OnSurface	ResnapAllToSurface()	Reset placement
FromSurface	ResampleSurfacePoints(), InvalidateTopologyCache()	Refresh emission sampling



Not every Inspector setting has a writable public property. Use the Inspector for private settings.

14. Performance

ERP uses Burst-compiled jobs to generate geometry. Work depends on effect counts, geometry settings and surface processing.

Geometry and branches

Ray and beam counts add geometry. Branch levels can multiply paths. To simplify:

- Reduce branching levels or branches per parent
- Reduce Branch Resolution
- Reduce Num Segments while checking the appearance
- Reduce beam count if fewer ribbons give the desired result

Updates

Increasing PointToPoint or OnSurface's effective Update Interval reduces random shape recalculations. Tracking, movement and lifecycle animation can still require geometry updates. Shader Flow Speed can add visual motion without increasing random shape-update frequency.

Skinned surfaces

Use low-poly sources where practical. OnSurface's Collider Bake Rate balances collision update frequency against processing work. Check the fastest expected animations. FromSurface does not use this collision-baking workflow.

Measurements

Measure a representative build on target hardware. Use Unity's Profiler to distinguish scripts, surface work and rendering. Record Unity/URP versions, hardware, resolution, effect counts, geometry settings and source mesh complexity for comparisons.

15. Support and release information

Electric Rays Pro 1.0 · By Kampa

www.jookitooz.com · kampatools@jookitooz.com

When requesting support, include:

- Unity and URP versions
- Operating system and target platform
- Ray component involved
- Reproduction steps
- Relevant Console messages
- Screenshots or a small reproduction project where helpful

For visual issues, include component settings and camera/Volume configuration.

Version	Release
1.0	Initial release