Flares Wizard

Flares Wizard is a Blender add-on for creating realistic Lens Flares, in Eevee and Cycles render engines.

It works by adding planes facing the active camera, every lens flare is a shader on the plane.

Starting from the version 3.0 the add-on is partially powered by Geometry Nodes, and the different components (geo nodes and shaders) are tight together using the Dirvers and the Python API.

This is the official documentation of the version 3.0.

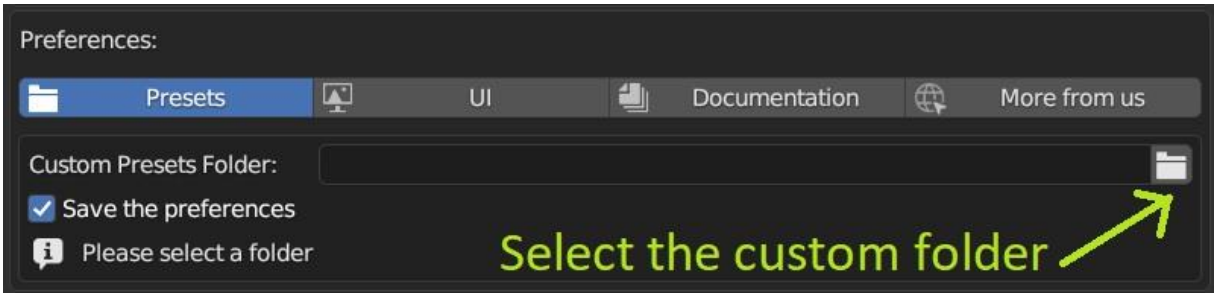
Installation

Installation Steps:

1- Open the user preferences, in the Add-ons tab press the Install button, then locate the .zip file then click on Install Add-on.
2- Check the box on the left to activate the add-on.
3- If everything went well, you will find a new tab in the 3D View -> Properties, named Lens Flares.

Custom presets folder:

If it's your first time using the add-on, you will need to setup a folder for your custom presets, to do so, create a folder somewhere in your computer then navigate to it from the presets folder in the preferences.



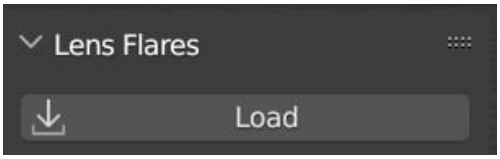
Then you have to save the preferences, the add-on will do it automatically if the parameter "Save the preferences" is enabled.
If you disable the add-on then enable it, you will need to select the folder again.
If you are just going to use the built-in presets, setting up the presets folder is not necessary.

How to update the add-on:

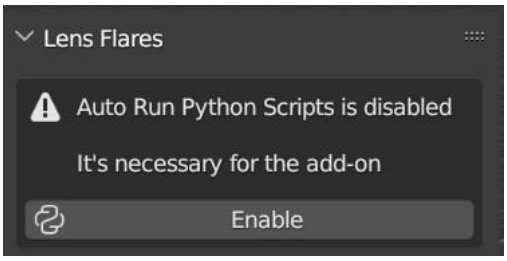
1- Remove the currently installed version.
2- Restart Blender.
3- Install the new version following the steps above.

How to use it

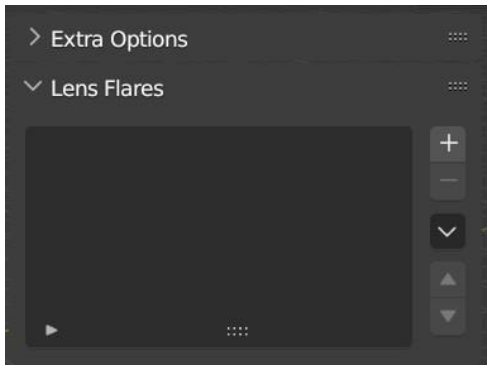
With any new project you will need to load the add-on's properties into the blend file by clicking on the button "Load".

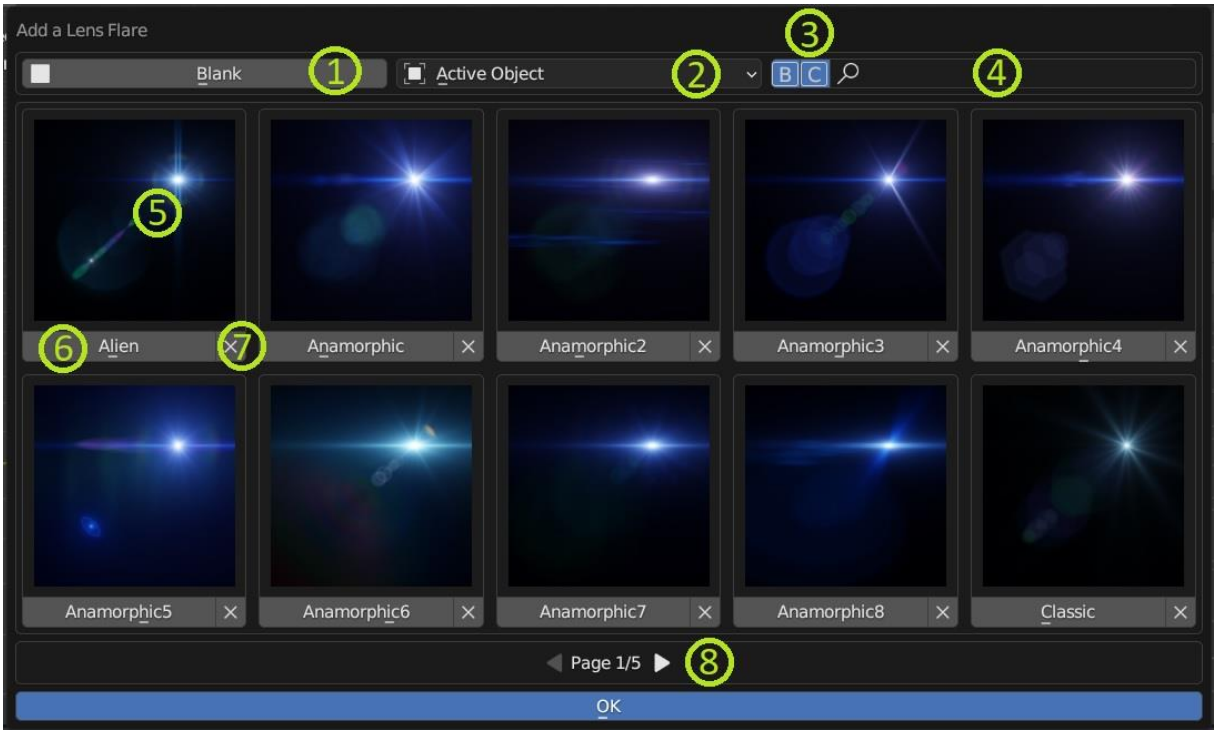


The add-on uses the drivers in Blender, so "Auto Run Python Scripts" must be enabled, you can enable it from the preferences or just by clicking on the "Enable" button from then add-on's tab.



When you first launch the add-on, the UI is composed of two panels, Extra Options (we will cover it later), and Lens Flares.
To add a new lens flare use the (+) button and the presets browser will appear.
But first make sure there is an active camera in the scene, and select an active object or a collection depending on what you want the lens flare(s) to be attached to.





1- To add an empty lens flare, that means containing no elements (we will cover the elements later).
2- You have two options:
   a- Active Object: The lens flare will be attached to the origin of the active object, you can change this parameter latter.
   b- Active Collection: The lens flares will be attached to the origin of the objects inside the active collection, you can also change it latter.
3- B, C: A filtering option to show or hide the built-in presets (B) and/or the custom presets (C).
4- Search field to filter the presets by their names.
5- A preview of the preset, you can change the size from the preferences under the UI tab, you can also change the number of rows and columns.
6- To load the preset, you can hold Ctrl to replace the select lens flare.
7- To delete the preset.
8- You can use the arrows to change the page.

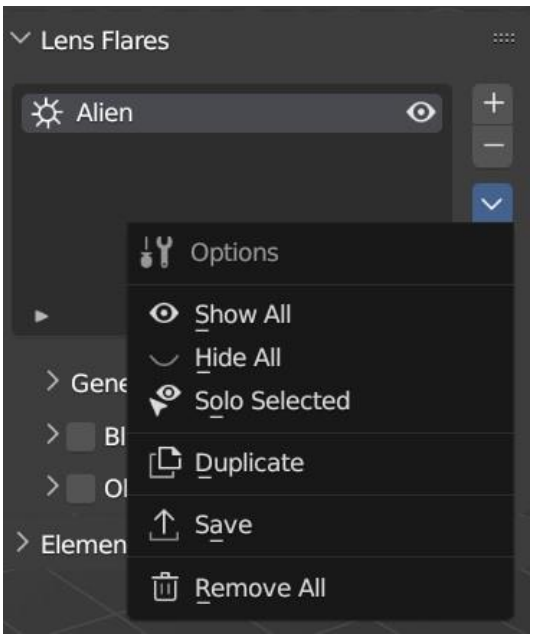
You can press the OK button to close the browser, you can also use the Escape key, or just click outside the browser window.

After adding the lens flare a new item will be added to the list, and it's correctly visible from the active camera view, you can hide a lens flare using the button with the eye icon.

And to delete the selected lens flare use the (-) button.

The (V) button is the list of available options:

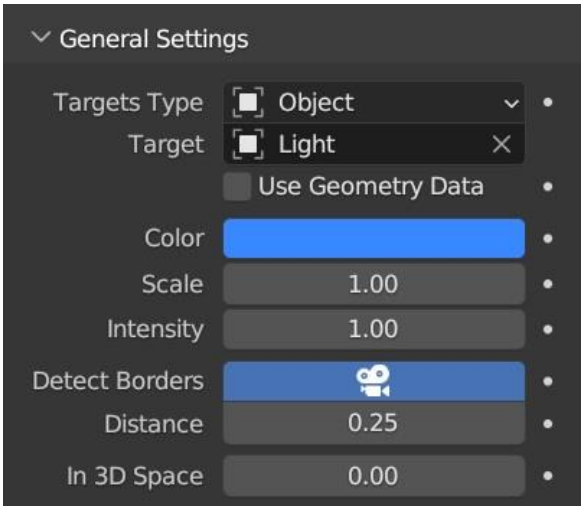
- **Show All**: to show all the lens flares.
- **Hide All**: to hide all the lens flares.
- **Solo Selected**: to hide all the lens flare except the selected one.
- **Duplicate**: to create a copy of the selected lens flare.
- **Save**: to save the selected lens flare as a new preset.
- **Remove All**: to delete all the lens flares.



Lens Flare Parameters

The lens flare has multiple parameters that are grouped in the following categories.

General Settings

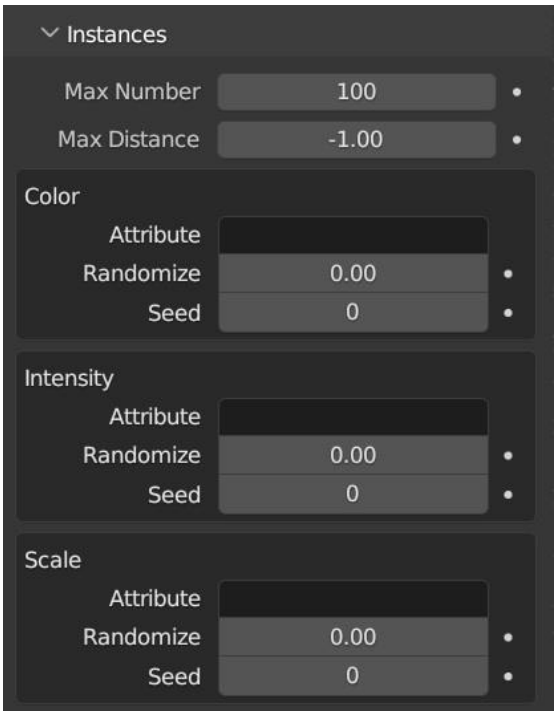


The Parameters that will affect all the Elements.

- **Targets Type :** the target could be a single object or the objects inside a collection.
- **Target :** the object(s) that the lens flare will be attached to (the origin).
- **Use Geometry Data :** by default the lens flare is attached to the origin of the target object, but if this option is enabled the add-on will use the geometry data (vertices, curve points, point cloud…etc.), the modifiers are taken into account, including Geometry Nodes.
- **Color :** color of the lens flare.
- **Scale :** size of the lens flare.
- **Intensity :** brightness of the lens flare.
- **Detect Borders :** when the source of light (target) is outside the borders of the active camera plane, the lens flare will fadeout.
- **Distance:** with this option you can specify the distance where the lens flare will completely fadeout. To make the lens flare look more realistic, the lens flare will fade out gradually until reaching the desired distance. The fade out start in the frame of the camera and ends in the specified distance.
- **In 3D space** : by default the lens flare will be placed in front of the camera, because the effect (lens flare) happen in the lens of the camera, if you want to have a 3D effect, just enable this option. When enabled, the scale of the lens flare will change depending on the distance between the active camera and the Target, to sell the illusion of depth. You can change the scale to your liking using the parameter "Corrective Scale".

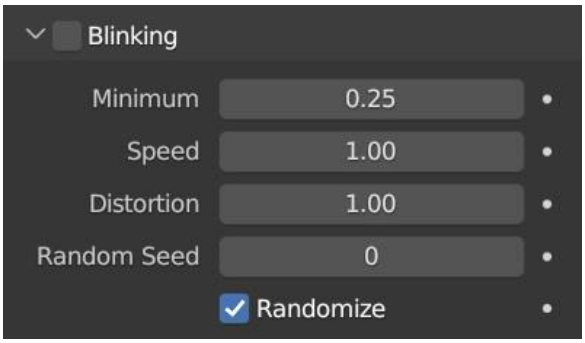
Instances

When the target is a collection or “Use Geometry Data” is enabled, the add-on will create instances of the lens flare, and you will have few more options.



- **Max Number:** to limit the number of instances, because you could have an object with thousands of vertices and if you enable “Use Geometry Data” Blender will either freeze or crash, so you will need to adjust it depending on your scene and computer resources, you can use the value -1 to display all the available instances (No Limit).
- **Max Distance:** the instances that their distance to the active camera is higher than this value will not be rendered, useful if “In 3D Space” is enabled and the far away instances are to small, it’s better to not render them to get a better performance, you can also use the value -1 to display all the available instances.
- **Color:** it’s possible to use a geometry attribute like the vertex color or a stored named attribute in geometry nodes to replace the lens flare’s global color, it’s also possible to randomize the color of the instances.
- **Intensity:** same as the color, it’s possible to use a vertex group or a named attribute to be multiplied by the global intensity, so ideally it should be in the range 0 to 1, and it’s also possible to randomize the intensity of the instances.
- **Scale:** same as the intensity, but in this case the global scale is the targeted parameter.

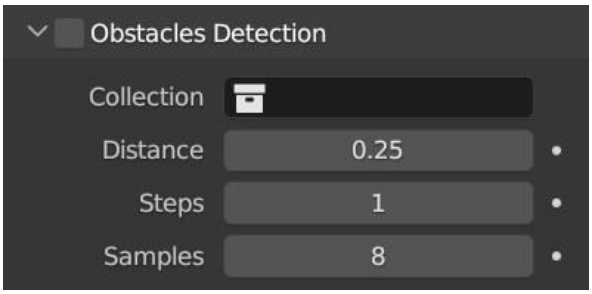
Blinking



Make the Lens flares blink (Flicker), to use this option you will need to enable it first by checking the box next to Blinking, then you can play with the parameters.

- **Minimum:** the blinking uses a factor in the range 0 to 1, so outputted factor is a the value [Minimum..1]. You can increase the Minimum value to make the blinking effect more subtle.
- **Speed:** speed of the blinking effect.
- **Distortion:** distort the noise pattern.
- **Random Seed:** to change the randomization pattern.
- **Randomize:** to give every instance a different random seed.

Obstacles Detection



When enabled the objects (with geometry) that are inside the obstacles collection will be considered as obstacles, that mean if a target is behind an obstacle the lens flare will disappear.

- **Collection:** the objects inside the selected collection will be the obstacles, try to use some optimized objects to get the best performance.
- **Distance:** the distance between the target and the obstacles, if reached, the lens flare will start to fade out.
- **Steps:** divide the Distance into this amount of steps for a smooth fadeout, just be aware that it's very expensive to compute, especially with multiple targets, so try to use the lowest number possible.
- **Samples:** precision of the proximity detection, 8 samples is more than enough for most cases, and it's also expensive to compute, if you want to change it, and for optimal results use multiples of 8 E.g. 8, 16 ,24...

Lens Flare Elements

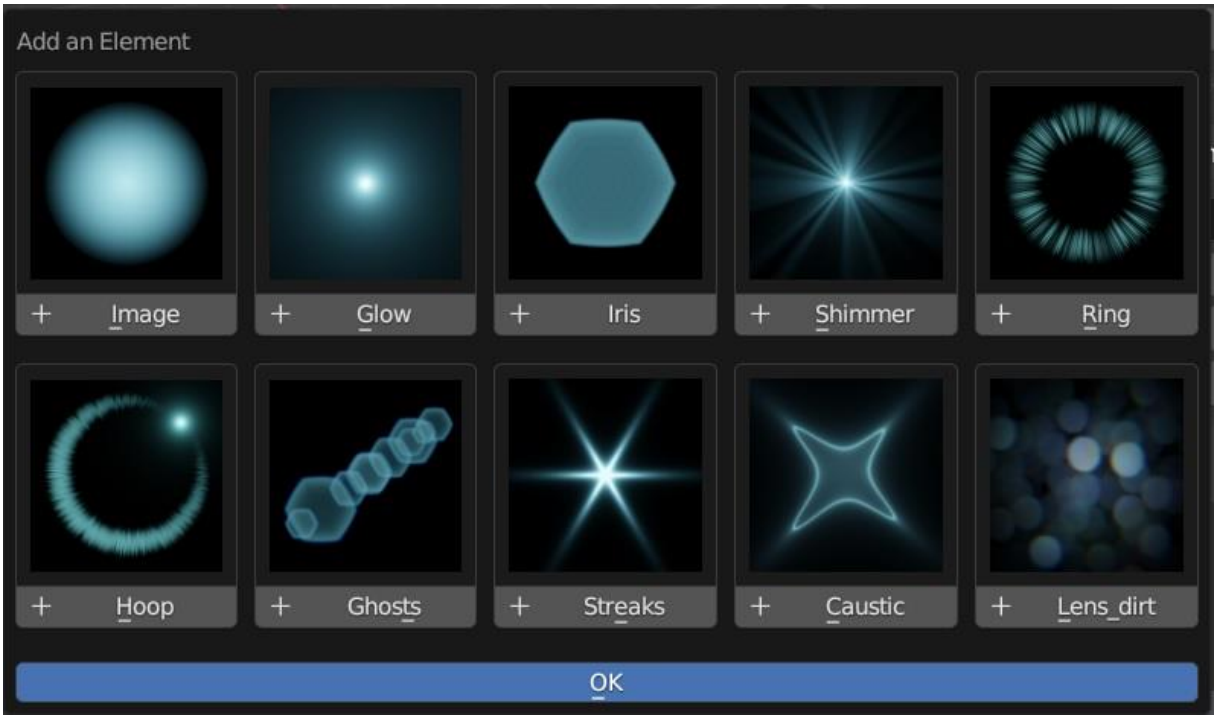
You could add as many lens flares as your hardware can handle, every lens flare is composed of elements, the elements are the building blocks of the lens flare, and every element is unique in its look and behavior.

There are two types of elements:

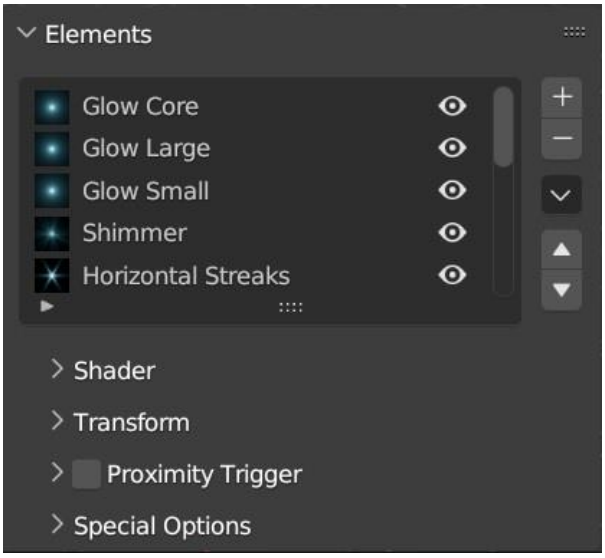
1. **Procedural:** math based.
    - **Pros**: infinite resolution, parametric, doesn't require a lot of RAM/VRAM.
    - **Cons**: computationally expensive, reaching the limit of nodes quicker because the shader requires lot of math nodes.
2. **Image Texture:** image texture based. It's the opposite of the procedural one in term of pros and cons.

The Image texture based Elements are: (Image, Lens Dirt, Ghosts), the rest are procedural.

In the Version 3.0 there are 10 Elements, You can press the "+" button to luch the list of available elements.



To add a new element press the button with the “+” icon under any thumbnail, then the element will be added to the list of elements.



From there you can change the parameters to your liking.

The parameters are grouped in the following categories:

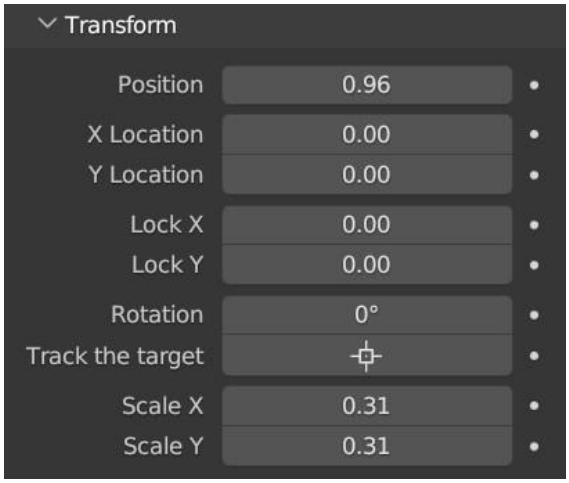
Shader

The parameters to control the color and brightness of the Element.

The common parameters are:

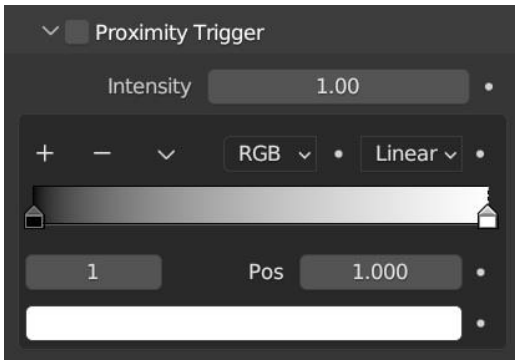
- **Use Global Color:** you can choose how much to use of the global color (1 is 100% Global Color, 0 is 100% Element's Color).
- **Color:** the color of the Element.
- **Intensity:** the brightness of the Element.
- If the Element is image based, you will have the options to load a new image, or to select a loaded image from the drop down menu.
- **Falloff:** Light falloff (the brightness decrease with distance).
- **Interpolation:** interpolation of the falloff, you can use a linear interpolation or a smooth step which is more like an S shape.
- **Image:** to add an image texture for the image based elements, the add-on comes packed with more than 100 image textures, but it’s also possible to use any image from your computer.

Transform



The parameters to control the location, rotation and scale of the element. Some parameters give the element some unique behaviors.
With the **Position** parameter, you can move the Element in a line between the origin of the Target and the center of the Camera (0 = Target position, 1 = center of the Camera, 2 = the opposite of the Target position). It's a common behavior of the real Lens Flares.
With the parameter **Track the center**, the Element will change its rotation to always face the center of the Camera.
Every Element has its own Scale, but it's affected by the Global Scale, in technical terms: Final Scale = Local Scale * Global Scale.

Proximity Trigger



With this option it’s possible to change the intensity of the element dynamically depending on the distance between the target and the (borders & center) of the active camera.
Intensity: replace the intensity of the element by this value.
It is mapped to the white color in the Color-ramp.
The intensity of the element is mapped to the black color.
The far right side of the color-ramp represents the borders of the camera.
The left side of the color-ramp represents the center of the camera.

Special Options

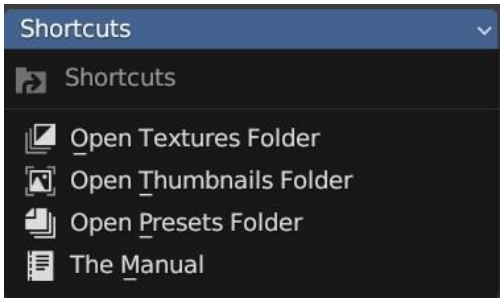
All the elements have some special options except the Glow element.

Extra Options

A set of extra functionality, and helpful options.

Shortcuts

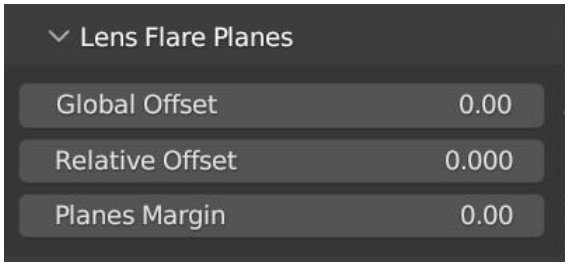
Some operations to simplify the access to certain files and folders, because the path to the Elements folder for example in Windows:



"C:\Users\UserName\AppData\Roaming\BlenderFoundation\Blender\3.x\scripts\addons\FlaresWizard\Presets "
It's a long path to go through every time you want to open this folder, but with the operator "Open Elements Folder" it's just one click.

Lens Flare Planes

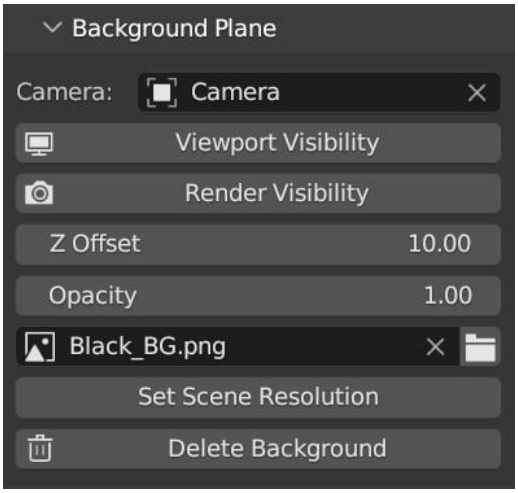
Few extra options to manipulate the lens flare planes.



- **Global Offset:** to move all the planes in their local Z axis, useful to avoid the intersection between the planes and the objects in close-up shots.
- **Relative Offset:** distance between the planes.
- **Planes Margin:** to scale up the planes, useful to avoid some artefacts on the borders of the camera if DOF is used.

Background Plane

Lens Flares are a post processing effect in CG, that's why you don't necessarlly need an actual 3D scene for the add-on to be useful, because you can add any image or video as a background then add your Lens Flares on top of it, thanks to this functionality.

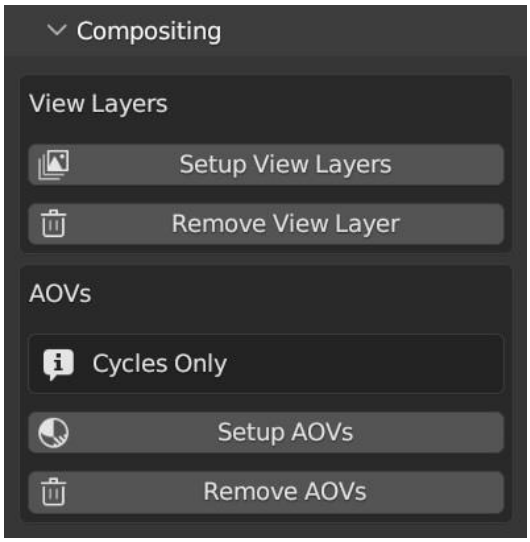


It works by adding an image or video on a plane that is parented to a camera. The available parameters are:

- **Camera:** the camrera that the plane will be parented to.
- **Viewport Visibility:** to show or hide the Background in the 3D viewport.
- **Render Visibility:** to show or hide the Background in the Render.
- **Z Offset:** to move the Background away from the Camera.
- **Opacity:** transparency of the Background.
- **Image:** the Background image.
- **Set Scene Resolution:** if your image resolution is not the same as your scene resolution, you can use this operator to match the scene resolution with the image resolution.
- **Delete Background:** to delete the Background plane.

Compositing

The lens flares renders very fast because they are mostly emissive shaders, so in most cases 1 sample is more than enough in both Eevee and Cycles.
So the efficient way to render lens flares is to put them in their own view layer, and render the rest of the scene with the necessary samples count, this way you will get faster renders, and it's also possible to render again the lens flares quickly without the need to render again the whole scene.



We have a set of operators to help with that:

- **Setup View Layers:** this operator will create a new view layer for the lens flares, and in the rest of the view layers will exclude the lens flares collection.
- **Remove View Layer:** to remove the lens flares view layer.
- **Setup AOVs:** to setup the AOVs for the lens flares shaders, useful if you need control over every lens flare individually (Cycles only).
- **Remove AOVs:** remove the lens flares AOVs.