SONIC PLANET

WHAT IS CREATION

Creation is a sound design utility with extraordinary audio-visual capabilities. It represents a dynamic system based on the gravitational force of which interaction is the basis of the macro-formal evolution of our universe. It creates a 3D simulation scene using this gravitational interaction between objects and masses and renders the cumulative sound from this dynamically evolving data.

As an analogy, the sonic world of Creation can be seen, the reveal of the dark matter / energy which in theory is responsible of the existence of the gravitation capable of forming the galaxies and structures in our universe.

Creation is an audiovisual scene architect, the embodiment of sound, space and visual design rolled into one.

THE MIND OF CREATION

The Creation app builds a gravitational space filled up to 999 objects and 5 masses. It is an abstract version of our universe driven by the Newtonian gravitational force which does interact continuously with all the objects existing in this space. The sonic structure is being rendered by observing and mapping the state variables from this complex system. Recalling the famous quote of Einstein : Here, the sound has no separate existence from space, time and matter (gravity) and its motion.

The epic evolution of these elements comes with the contribution of mathematics and fundamental physical laws, namely the Newtonian gravitation formula.

The Newtonian gravitation formula remains incomplete to explain the fundamental phenomenons of our universe. Quantum physics, and Einstein's general relativistic theory where the gravitation is represented by the space - time curvature (and not in form of a force) are more complete theories in explaining our universe. It predicts that light rays bend around massive objects or gravitational lensing, which we all can observe. However inside a certain range and application scale the Newtonian representation gives a pretty good approximation about the movement and kinetic behavior of the masses/bodies in gravitational field, for example the planetary objects in a solar system or any simulation physics driving computer games.

Even with the basic Newtonian gravitation formula, the calculation of the spontaneous states of multiple bodies in such a gravitational interaction cannot be done through a generic equation. Such an equation does not exist. But we can do it with iterative calculations and this is what the computers are the best for. We define the initial state of the system and then let it calculate the future states step by step. This is what is happening in Creation and is being processed directly on the GPU of the computer.

And since this is an abstract simulation, we can bend the physics of the nature, change the constants and the relation of the masses on the same formula of the gravitational force. We can also introduce an optional repelling behavior, a negative force, rather than only a positive force.

On 20th century, the scientific advances in explaining our universe and revealing its unseen part, its past and the future, has been a great inspiration for the new music composers. Composers have practiced some genuine approach to map these mathematical forms and structures in their music with new suggestions of notation, scoring and performing styles for traditional instruments. Listening to their music is the perception and sensation of these structures reformed, layered and scaled in time with their artistic intentions.

Moreover, with combining the research in acoustics, sound synthesis and advances in digital audio and computer aided sound design, we began to integrate our inspiration of modern science with constructing synthetic sonic structures that could never be obtained with traditional instruments.

Creation is an application which has been developed with our will to create unique evolving sonic structures. Watching the visual components of this app, while it creates its own universe / an abstract version of our “space habitat”, it provides us the moment of meditation of formal beauty and narrative fidelity. While it is unfolding and creating this dynamic complex scene, we pose the question *“how can we create the sonic structure of this system and render the audio in this volume and depth ?”*

The development of Creation is indeed the search of an answer (while there can be more) to this question; and such an answer which maybe leads to the ultimate audio-visual representation of the fundamental physical laws which does express the foundations of our universe.

Dr. Sinan Bökesoy

IMPORTANT NOTES

- Creation is a standalone application which is available for OSX and Windows versions. In the package, you will find also the CreationRemote VST3/AU plugin, which is a utility to control the Creation app remotely from your DAW, and apply parameter automation and assign midi controllers using the facilities of your DAW.

- Creation uses modern techniques for accessing GPU + CPU resources of modern hardware to achieve such an audio-visual performance. This is also why it is a standalone application.

- For best sound quality, prefer using a hardware audio interface. If you are using your computers audio hardware, prefer not sharing it with other applications at the same time. This might degrade the audio quality. For example you can route the output of Creation to your DAW internally, when you are running your DAW at the same time.

- It is recommended to use a recent computer to run the Creation app; hence we have set the performance of the Apple M1 as a reference, which can run all the factory presets. With a faster computer you can increase the object quantity and with slower machines you have to decrease the object quantity accordingly. Insufficient CPU will cause audio drops.

- The sample player oscillator on Creation does consume less CPU than the wavetable oscillator. The activation of Ring Modulation will consume additional CPU.

- Creation is protected with the iLOK mechanism and uses its licence authorization system. You can install Creation on 2 computers at the same time, and may authorize it with iLOK USB dongle, iLOK Cloud or direct to computer authorization methods. You can use the iLOK Licence Manager software to move your licence between the above listed iLOK environments and different computers anytime. Your licence will remain always on your iLOK account.

INSTALLATION OF CREATION

Ideally the Creation app can be installed on following destinations.

OSX :

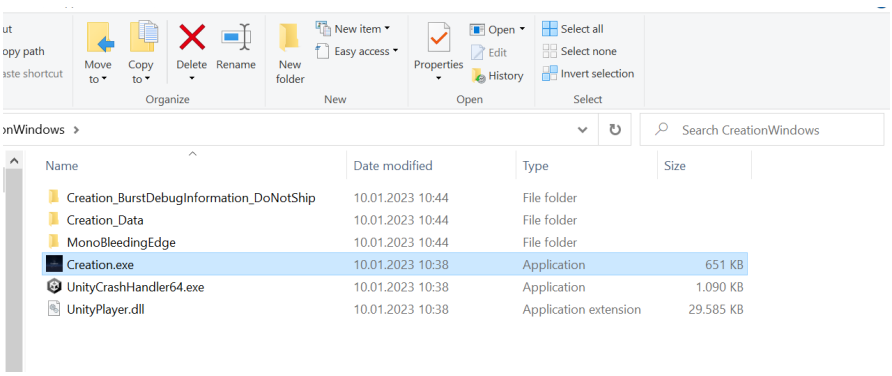
Drag the **Creation.app** to the OSX Applications folder.

Drag the **CreationRemote.component** file to the Components directory , and the **CreationRemote.vst3** file to the VST3 directory of your OSX system.

Windows :

Unzip the downloaded file and put the folder anywhere your prefer, for example on your desktop. You will notice the **Creation.exe** inside the folder, which is the Creation app. Keep it inside always but you can create shortcuts of it and move elsewhere of course.

And you should move the **CreationRemote.vst3** your systems VST3 directory.



FILE OPERATIONS ON CREATION

When you run the app, Creation will create the following directories on your system hard-disk.

OSX :

In your systems Application Support folder, you will notice the **com.sonicPlanet.Creation** directory. This is being created when you launch the app the first time.

Inside this directory you will see these folders;

AudioBounces **:** When you record the output of Creation, the bounce .wav files will be put here.

Presets **:** All the preset bank files of Creation are here, you will see the *Factory Bank* and a *User Bank* folders by default inside this directory.

Samples **:** The sample files are inside this folder, you can put your own samples here as well which will be then listed on Creation app's samples menu.

WaveTables **:** The wave table files are inside this folder, you can put your own wavetables here as well which will be then listed on Creation app's wavetable menu.

TuningScales **:** The scale tuning scale files are located inside this folder.

When for some reason you need to reinstall default files of Creation, it is sufficient to delete the relevant directory from your hard-disk. During the next launch of the app, Creation will detect that the folder is missing and will recreate it with its default contents. Hence, if you want to reinstall the samples, then just delete the *Samples* directory.

It is strongly recommended to use the directories **Presets**, **Samples** and **WaveTables** for relevant custom import / export operations. Hence, put your custom files inside these folders and then create backups of these folders for later use.

Our intention is the keep these operations and the user interface as simple as possible and keep these operations focused to the Creation application support folder.

Windows :

The Creation folder with all the folders mentioned above will be created in this following folder.

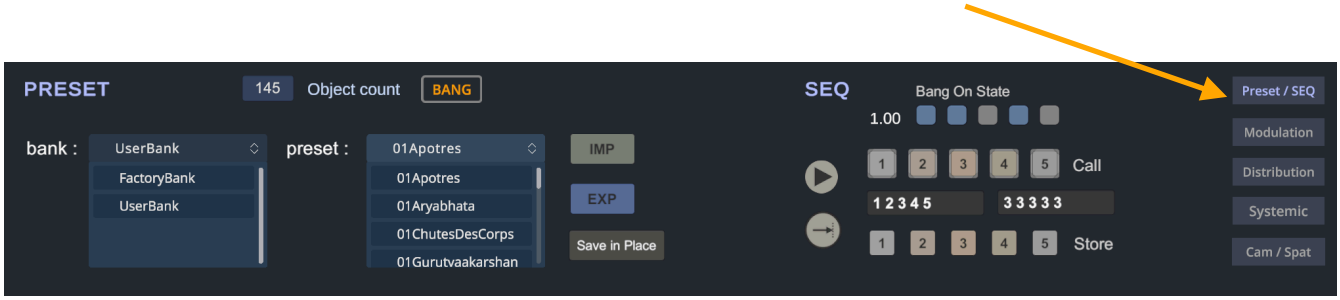
System(C:)/Users/“username”/AppData/LocalLow/sonicPlanet

“*username*” is what is defined as your username on your hard-disk. You might not see the *AppData* at first hand, because it is in the hidden files category by default. You should simply choose *show invisible files* in the file options menu to make it visible.

Then you will be able to access all the folders mentioned above inside the **sonicPlanet/Creation** directory.

PRESET HANDLING

Preset handling on Creation has been made as simple as possible. One can access the corresponding interface panel by clicking on the Preset/SEQ button.



You will see the bank selection pop-up menu and also the relevant preset selection pop-up menu. There are 2 preset banks available :

The **FactoryBank** contains the embedded 36 presets of Creation. These are meticulously prepared by Laurent Mialon and are a great way to start and see the potential of the Creation app.

Each preset of Creation contains 5 additional scene versions stored with it. Use the SEQ slots 1, 2, 3, 4, 5 . to call then , e.g. click on the buttons at the *sequence Call row*. Then the preset parameters will morph between these scene states.

When you delete the Preset folder by mistake, Creation will recreate the factory content again when you relaunch it.

The UserBank is where you will export your custom presets, load them back and create backups by accessing the Presets/UserBank folder on your hard-disk.

When you select a bank on the bank selection menu, its corresponding presets are listed on the preset pop-menu automatically. There you can select the preset.

To export a custom preset use the **EXP** button , a file browser will open directly pointing the UserBank destination. Just give a name to your preset and confirm the operation.

If you would like to save your edited version directly on the existing preset location, click the "**Save in Place**" button. It will ask a last confirmation and then will save it to the current location.

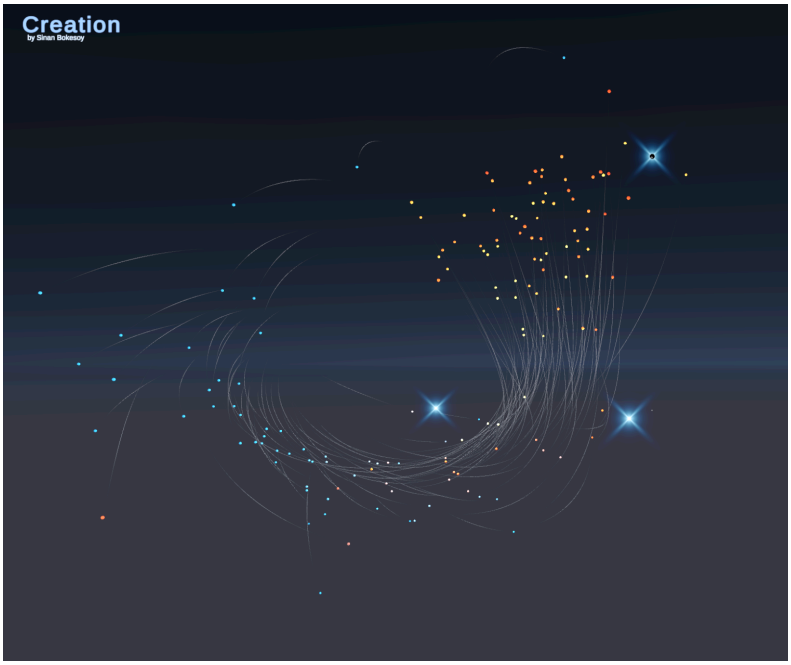
You can create other directories inside the **Presets** folder, and use them to store your custom presets, organize your presets in different manners. However keep in mind to make backups, if you delete the Presets folder, the app will recreate only the default FactoryBank and an empty UserBank folder.

THE STRUCTURE OF CREATION

The physics engine :

Creation includes 5 “**Masses**” and up to to 999 **Objects** which form up a 3D scene of gravitational interaction, a simulation of a small universe. The system achieves an amazing amount of calculation of continuous iterations, the visualization of them resulting as the “Creation” universe and also it extracts various state parameters from this small universe to compose a continuous soundscape all-together.

The **Masses** can be seen as dense gravitational objects, applying large gravitational force to their environment, hence they attract (and optionally they can also repel) the **objects** of the space, forcing them to move and orbit in complex trajectories. There can be up to 5 Masses in presence. Detailed info will be given in following chapter.



Objects are entities (with small masses) subjected to the gravitational force of the Masses in space. Besides, the objects themselves also apply gravitational force to each other (much smaller in comparison to the masses) There can be up to 999 objects present on the scene. Detailed info will be given in following chapter.

The gravitational force between two masses is inversely proportional to the square of the distance between masses. And of course it is proportional to the scale of masses. See the Newton's law of universal gravitation formula below.

$$F = G\frac{m_1 m_2}{r^2}$$

F = force
G = gravitational constant
m_1 = mass of object 1
m_2 = mass of object 2
r = distance between centers of the masses

If both masses are still and not moving initially, an applied force will attract them towards each others center point. However if they are moving in some direction initially, then this force will create a complex orbital movement of the smaller mass around the bigger mass, like planets orbiting around the sun.

All objects around apply some gravitational force to each other and they affect each others orbit. Hence consider the case with **5 Masses and 999 objects**.

Then on each object, there will be the gravitational force of the 5 Masses + the other 998 objects.

Thus, in total **999*5 + 999*998 = 1.001.997** force values of various directions are calculated on each frame of the application, and likewise the next positioning of each object will be defined (The Masses are stationary, and the objects move around them)

As a consequence, we have developed special GPU calculation routines to handle this amount of task and remove it from the shoulders of the CPU, which is also responsible to calculate the immense amount of sound data for each object. This is the sheer power behind the Creation.

Creation has two types of Mass behavior; optionally the Mass type can be chosen to repel the object instead of attract it. This adds beautifully complex motion paths unlike the ones in real universe.

Creation also lets you adjust various parameters to control the nature of the gravitational interaction, the initial conditions. etc,. These will be explained on a later chapter.

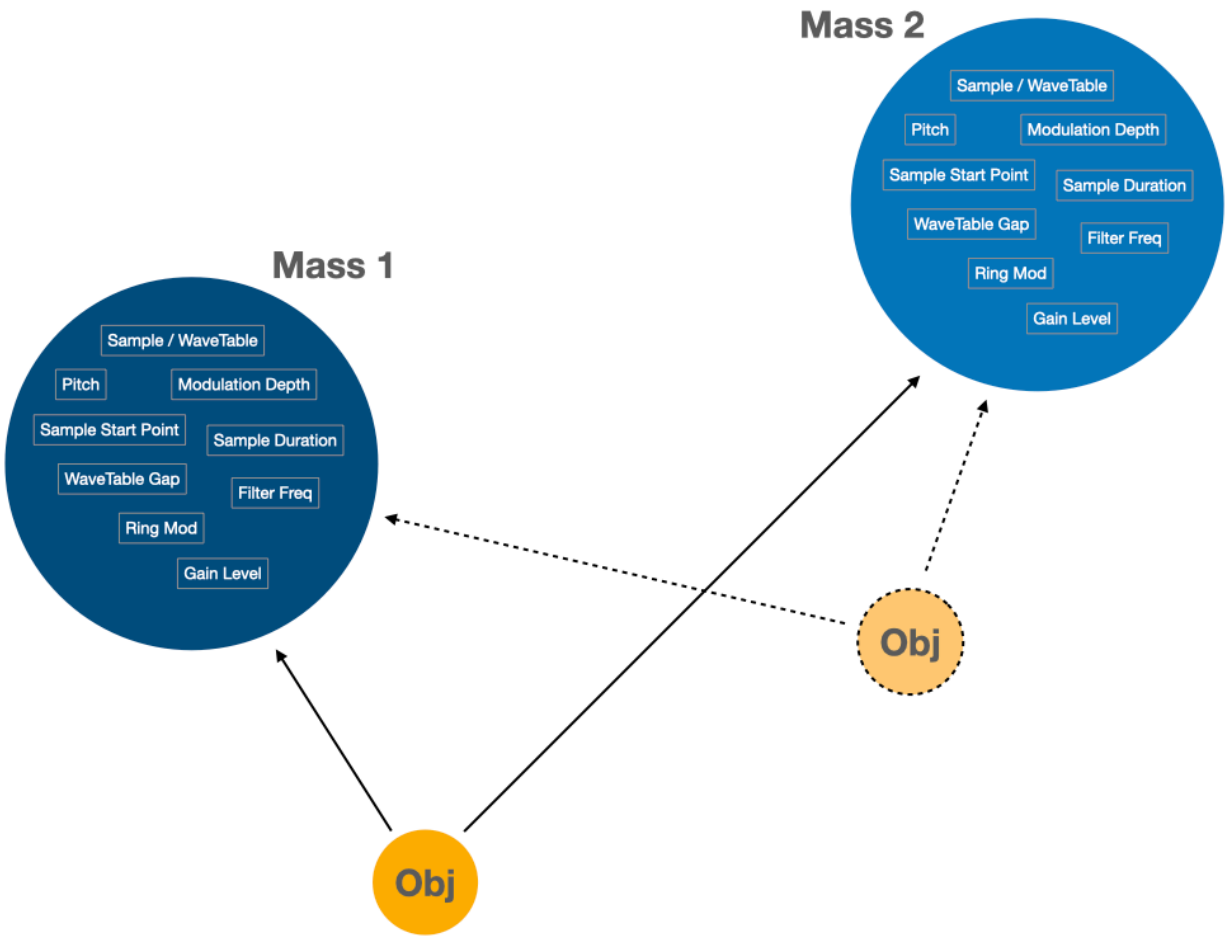
As said, once this artificial universe has been created, the state parameters extracted from the system will serve to construct the audio component of each object.

The Audio engine :

Creation possesses two types of oscillators on each object. A WaveTable oscillator and a sample player oscillator with granular synthesis appeal.

How does the audio engine calculate the sound of each object ?

It is the Masses which decide which wave content and relevant sonic parameters to be used by these objects. You can see them listed on the figure below inside each Mass circle.



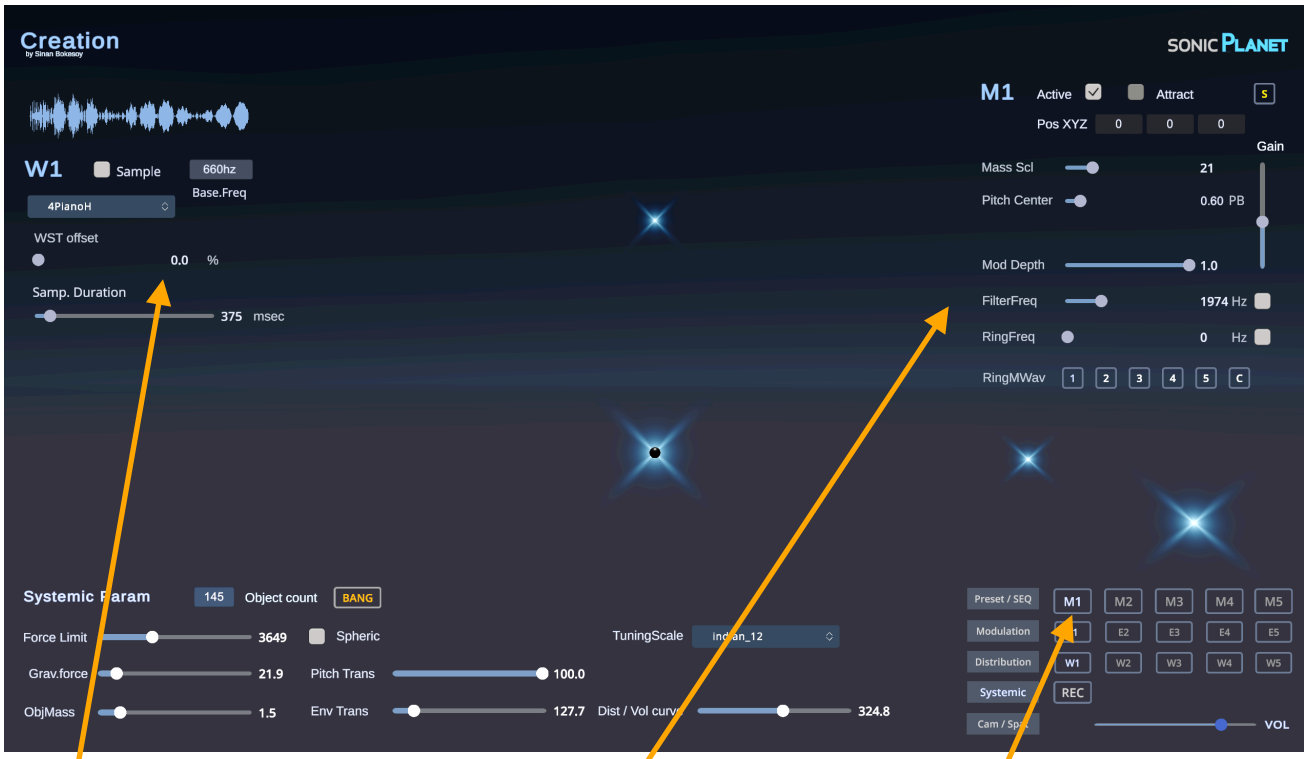
Let's assume that an object, as on the figure above, previously located in a close position to Mass2 has now moved closer to Mass1. It is the distance between the center of the object and the center of the Masses on the scene, which is responsible on choosing the audio content and its parameters for each object.

If the object is closer to Mass 1 , then it switches its sample content to the one defined by the Mass1. And in the case of continuous sonic parameters like oscillator pitch or the oscillator gain, a weighted value is being calculated considering all distances from each Mass.

If the Masses are set to wavetable oscillators instead the sample player oscillator, then a weighted volume balance between all these wavetables will be created and you will hear a blend of these wavetables according to the weighted distance calculation of the relevant object to each mass.

This said, each object calculated 5 wavetable oscillators at the same time and finds the necessary blend mix. This is why the wavetable oscillators are much more CPU consuming than the sample player oscillators, which just switch the content instantly.

You can set all these parameters for each Mass on the user interface.

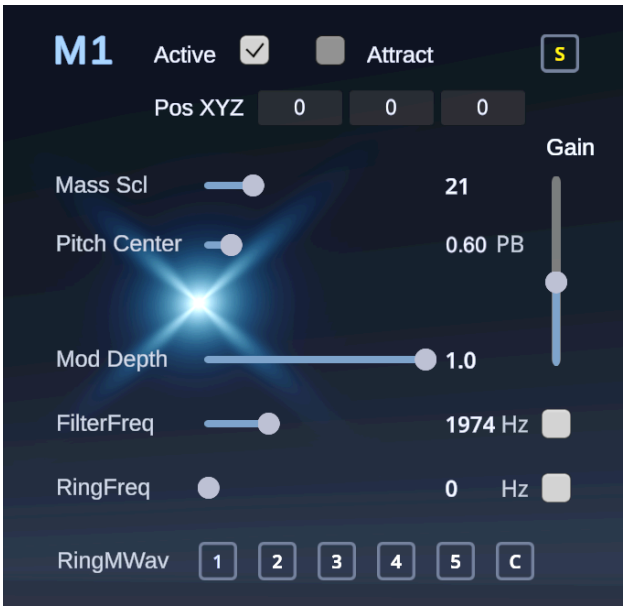


Mass Selection button

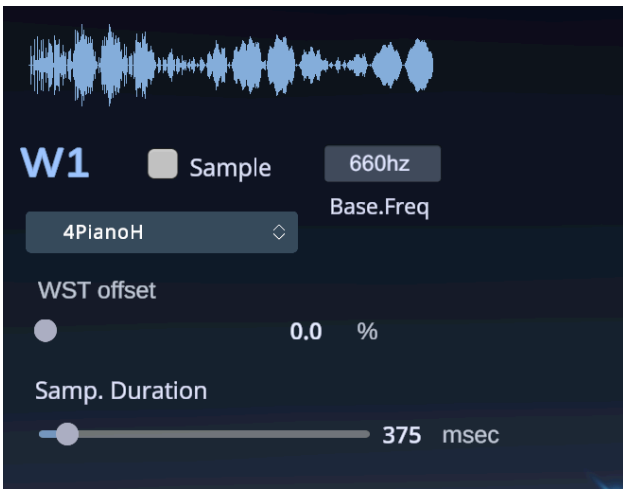
Mass Waveform parameter area

Mass Parameter area

You can open the Mass parameter panel by clicking on the buttons M1, M2, M3, M4 or M5. Double clicking on the button will close the panel.



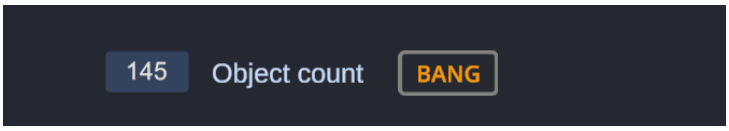
In a similar way, you can open the Mass Waveform parameter are by clicking on the buttons W1, W2, W3, W4 or W5. Double clicking on the button will close the panel.



How do we start this system ?

There is a "**Bang**" button around the bottom center of the user interface panel. And on its left , you can input the number of the objects which you would like to include on the scene. Remind your computers capability, and reduce this number if necessary. After defining the object count, just hit the **Bang** button. And the objects will do a

“big bang” at the defined distribution start point with defined initial force values and distribution shape. We will see the details of this process later.

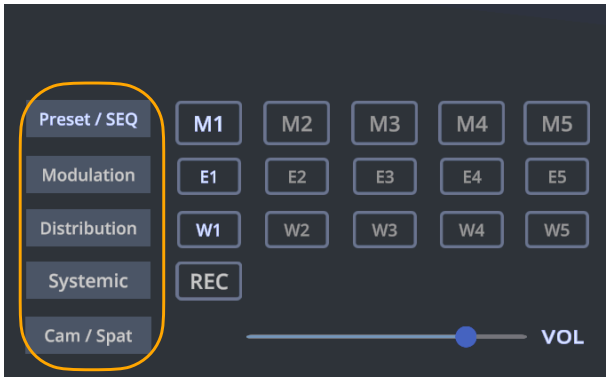


The User interface :

Let’s have a deeper look into user interface.

The bottom part of the screen (marked inside the orange rectangle above) delivers user interface controls for the following sections. Preset / Sequencer, Modulation, Distribution, Systemic and Cam/Spat sections.

Each section can be accessed by clicking on the relevant section buttons. Double clicking on them will close the relevant panel.



Each slider / button has a name describing its function and the sliders will show their corresponding unit values. Some sliders can be double tapped (for instance all the modulation sliders) so that they reset their values.

The button matrix on the right bottom part of the screen will take you directly to the relevant Mass panel. Hence **M1** opens the Mass1 control panel, **E1** opens the envelope panel for the Mass1 and **W1** opens the waveform panel which is dedicated to Mass1.

Again, double clicking on these buttons will close the relevant panel.

Shift + U key combination will close all the panels leaving just the Masses and the Objects on the scene.

There are some key shortcuts as well which is very handy to use for fast operation. Here is the list :

"**b**" : Applies a Bang event.

"**i**" : Camera moves forward.

"**o**" : Camera moves backward

"**g**" : Group editing of the Mass panel parameters. When you change a parameter on the Mass panel, it will be applied to all Masses at the same time.

"**up arrow**" : Selects the next wavetable / sample file on the relevant Waveform panel.

“**down arrow**” : Selects the previous wavetable / sample file on the relevant Waveform panel.

“**space bar**” : Freezes the movement of the objects on the scene.

“**Right Shift + 1**” : This will call the scene state 1 for the current preset.

“**Right Shift + 2**” : This will call the scene state 2 for the current preset.

“**Right Shift + 3**” : This will call the scene state 3 for the current preset.

“**Right Shift + 4**” : This will call the scene state 4 for the current preset.

“**Right Shift + 5**”: This will call the scene state 5 for the current preset.

“**LeftCommand + 1**” : This will store the scene to state slot 1 for the current preset.

“**LeftCommand + 2**” : This will store the scene to state slot 2 for the current preset.

“**LeftCommand + 3**” : This will store the scene to state slot 3 for the current preset.

“**LeftCommand + 4**” : This will store the scene to state slot 4 for the current preset.

“**LeftCommand + 5**” : This will store the scene to state slot 5 for the current preset.

MASS PARAMETERS

There can be 5 masses on the scene however you can deactivate and activate them with the **Active** switch. One can choose their type with the **Attract / Repel** switch.

Each mass can be given is 3D coordinate in the space. You can type the values on the **POSXYZ** fields.

The "**Mass Scl**" slider will change the scale of the Mass, likewise its gravitational force applied to the objects. You will also notice that the size of the Mass itself will change on the scene according to its scale setting.

The "**Pitch Center**" slider defines the main pitch of the waveform which the Mass defines for the objects closer to it then other masses. The unit of this slider changes according to the oscillator type.

For the samples it reads "**PB**" indicating the playback rate. Hence 2 means the oscillator playing the sample two times faster. For the WaveTables it reads in hertz indicating the frequency of the wavetable being played.

The “**Gain**” slider defines the overall gain of the mass which is applied to the objects. you can use this rather like a volume balance between all the active masses.

The “**Mod Depth**” slider sets the overall depth of the all modulations calculated on the Mass parameters.

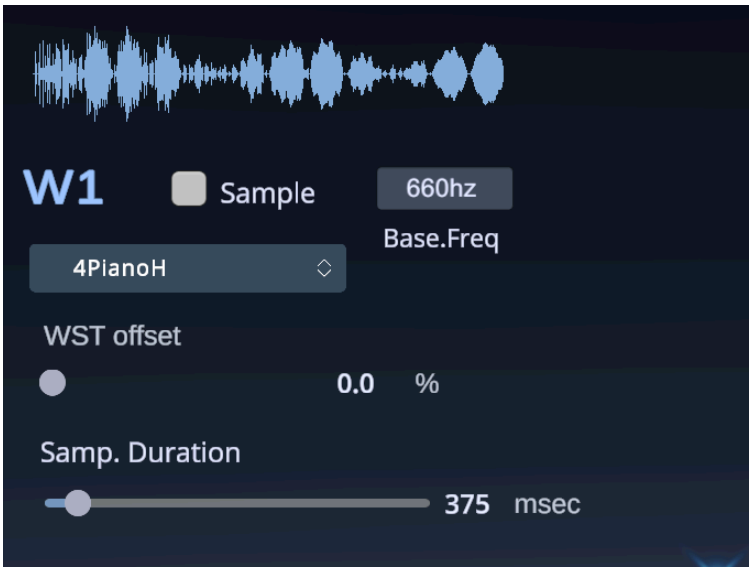
The “**Filter Freq**” slider sets the center frequency of the bandpass filter used by the relevant Mass. The switch next to it activates / deactivates the filter.

The “**RingFreq**” slider sets the ring modulation frequency used by the relevant Mass. The Ring modulation is available only on the WaveTable oscillator mode. The switch next to it activates / deactivates the ring modulation.

The Ring modulation waveform can be chosen with the 6 buttons located below the slider. They correspond to the wavetables set for each mass and can be used as well for the ring modulation as the modulating waveform if selected. The 6th button “C” is merely a sine waveform.

The “**S**” button serves as solo button. When clicked , the relevant Mass will be soloed and the others will be muted.

WAVEFORM PARAMETERS



Each Mass has its own Waveform parameters. You will use the buttons W1, W2, W3, W4, W5 to reach the relevant Mass Waveform panel.

The **Sample / Wavetable** switch changes the oscillator type. When it is on "**Sample**" you can select a sample from the pop-up menu to feed the oscillator. The waveform will be drawn at the top of the panel.

Creation comes with a number of samples, they are copied to the *com.sonicPlanet.Creation/Samples* folder when you launch the app for the first time. You will use the same folder to bring your own samples to the app.

You samples should be max. 5 seconds long. The accepted file format is .wav or .aiff (.aif). They can have different sample-rates. In case the file sample-rate is different than the system audio sample-rate, a quality resampling will be applied on the sample. Stereo files will be automatically converted to mono files.

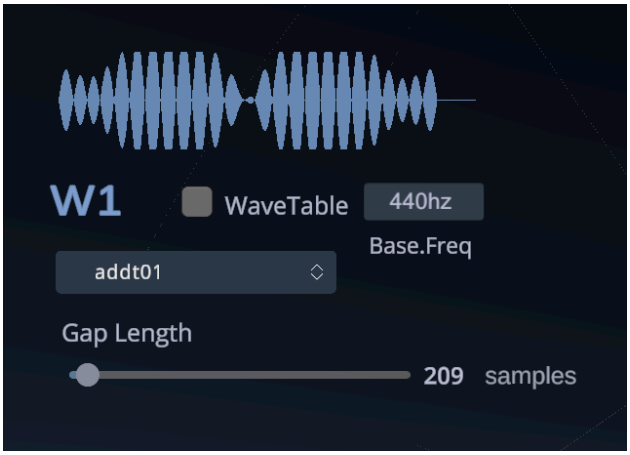
The base pitch of the sample can be defined on the **BaseFreq** field. 440hz is the reference value. At that value, the sample should be played as it is (given the Mass pitch center is set to "*1 PB*".)

With the "**WST offset**" slider, you can define the the waveform playback start offset. The value of this slider is in percentage, hence a value %100 is the end of the sample file.

The "**Samp. Duration**" slider sets the sample duration which will be looped by the oscillator. A value between 0 - 5000 msec. can be set.

The waveform display will update as soon as you change the settings of the "*WST offset*" and the "*Samp. duration*" sliders.

If the oscillator mode is on "**WaveTable**", then the controls will be slightly different.



The waveform pop-up menu will be listed with the wave tables coming embedded with the Creation app.

You can import your own wavetables to this list by putting them inside the *com.sonicPlanet.Creation/WaveTables* folder. The restriction is that they have to be in up to 2048 samples length. Hence, you can use wavetables with sizes 256,512,1024 or 2048. They can be in .wav or .aiff (.aif) format.

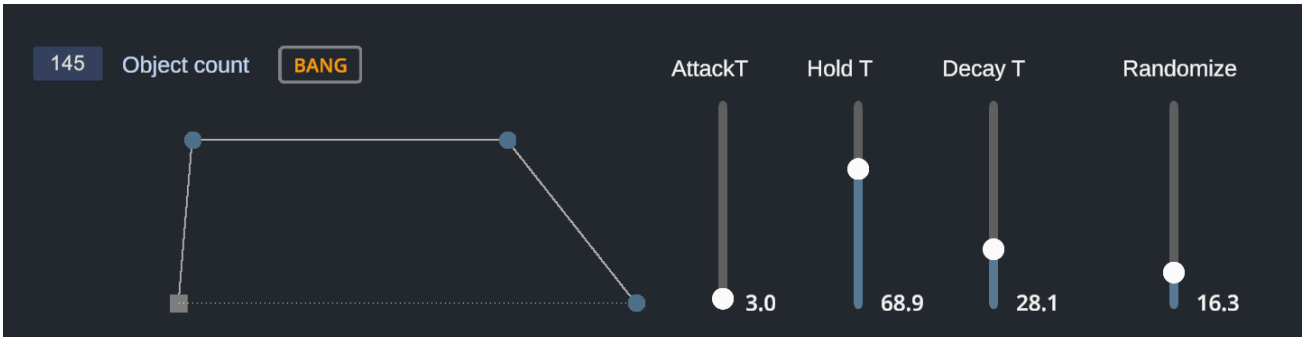
The "**Gap Length**" slider introduces a silence at the end of the wavetable with the indicated length. This is to achieve some pulsar synthesis results especially when the gap is larger than the wavetable size.

The **Base-Freq** field is again just to set a default reference to your pitch. The real pitch value will be set with each Masses pitch center value in hertz.

ENV PARAMETERS

The envelope section is quite similar to the classical synthesizer envelope function as we know. It shapes the audio signal with and attack , hold and decay. The envelope function is effective only on the sample playing oscillator as the wavetable oscillator is sounding continuous.

The envelope starts at the beginning event of the sample and ends at its defined duration, then it loops back.

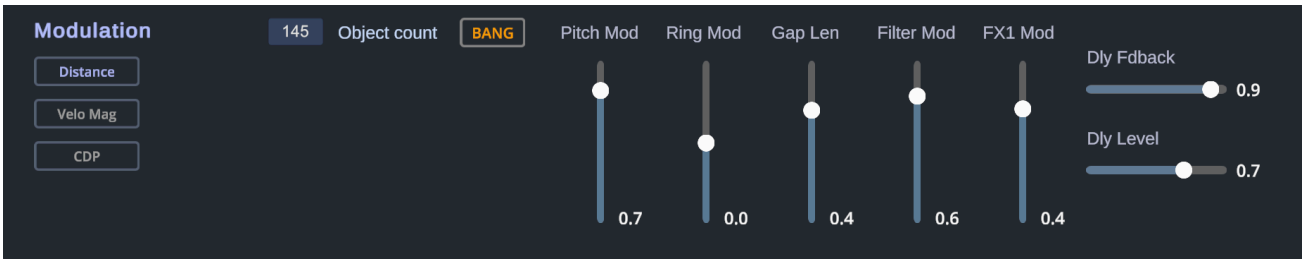


Each Mass has its own envelope definition. You can access them with the buttons E1, E2, E3, E4 and E5.

One thing you should know in our case is that the sum of **attackT**, **holdT** and **decayT** times should be equal to 100 or less. For instance if you set the holdT to 98 than the attackT and DecayT can be 1 , making altogether 100.

The **Randomize** slider value adds a degree of randomness to these values each time a sample waveform is being looped.

MODULATION PARAMETERS



Creation uses the system parameters extracted from its dynamic scene of Objects and Masses to create modulations on sonic parameters. There are no LFO's or other traditional mod. signal generators.

You will notice that the color of the Objects are changing continuously. The color can indicate the state of each object regarding its distance from the Mass, its velocity and also the closest distance between two objects. Depending on the last selected modulation source. (distance , velo mag, cdp) the color projection reshapes.

Again the modulation sources are the Object distance from the Masses, the Velocity magnitude of the Objects and the Closest distance between two Objects. You can select each source with the buttons on the left (**Distance**, **Velo Mag**, **CDP**) and then set the modulation depth for each destination sonic parameter. The available ones are "**Pitch Mod, Ring Mod, Gap Length / Sample Duration , Filter Mod. and FX1 Mod** ".

Each destination has a bipolar slider so that you can set positive or negative effects of the source to its destination. Double tapping on the slider will reset its value.

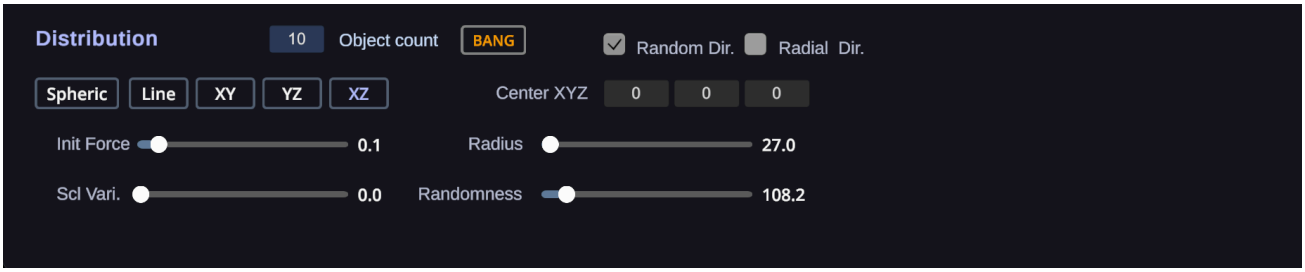
Each modulation destination adds its calculated value to the value set on the Mass panels. For example, the pitch modulation (be it positive or negative) will be added to the Pitch Center value set on the Mass Control panel.

The **FX1 Mod** needs further explanation. Each Object has its own mono delay processor, it has simply a delay time and feedback level control. The FX1 mod destination addresses the delay time of this processor. This can provide various delay FX's from comb filter style to early reflection distributions.

It is best that you practice with the possible source and destination interactions.

DISTRIBUTION PARAMETERS

Distribution parameters set how the objects are initially defined on the scene before a “Bang” event. They have a initial position and a initial force applied to them with a random direction. This initial boost gives them the “Bang” dynamics and this is the start of everything going on on the Creation.



The **Center XYZ input** field will let you define the center of the object distribution action in 3D coordinates.

The **Init Force** slider value assigns the amount of the initial force applied to each object during a BANG event. (with random direction or radial direction) If this is minimum, they will start to move with minimum energy and will be attracted (or repelled) by the Masses. Also the gravitational force between objects will be effective if they begin to distribute themselves in very close distances. When you set the **Init Force** slider to higher values, the initial spread will be with a higher energy and acceleration, like an explosion.

The **Random Dir.** switch will apply a force in random direction during a BANG event. (Radial Dir. switch must be off). If both Random Dir. and Radial Dir. switch are on, then the objects will have radial directions on vertical or horizontal planes.

The **Radial Dir.** switch will apply a force in radial direction during a BANG event. This results circular orbital paths around the Masses, depending the Mass gravity scale and the initial force slider value. If it is too low, then the objects will fall towards the Mass

with decreasing radius orbits. By default these circular orbits are on horizontal plane (XZ) but if the Random Dir. is turned on together, then some objects will have vertical and some will have horizontal circular orbits.

The **Scl Vari** slider sets the random variation of the object scales. This allows variations in object sizes and therefore their masses. Higher values will increase the variation.

There are 5 different type of distributions available on Creation. **Spheric**, **Line**, **XY** plane, **YZ** plane and **XZ** plane.

Spheric : This distribution type distributes the objects inside a 3D sphere of which center point is defined by the **Center XYZ** coordinates. The **Radius** slider defines the sphere radius and the **Randomness** slider effects the uniform distribution of the objects inside the sphere.

When the radius is at minimum , this distribution will create a “Big Bang” event where all the objects will be concentrated at the center point.

Line : This distributes the objects on a 2D vertical line. The length of the line is defined with the **Radius** slider , and the uniform distribution with the **Randomness** slider.

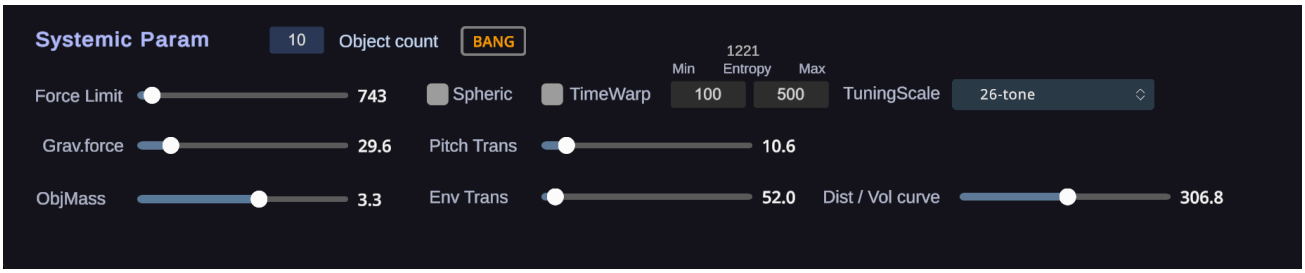
XY : This distributes the objects on a 2D circle on the **XY** plane. The radius of the circle is set by the **Radius** slider.

YZ : This distributes the objects on a 2D circle on the **YZ** plane. The radius of the circle is set by the **Radius** slider.

XZ : This distributes the objects on a 2D circle on the **XZ** plane. The radius of the circle is set by the **Radius** slider.

SYSTEMIC PARAMETERS

The systemic parameters are quite important in defining the core parameters affecting the behavior of this dynamic system.



Grav. Force : This slider sets the gravitational constant. The Newtonian gravitational constant is defined as 6.6743 however why not allowing artificial values in Creation to experiment with other possibilities.

ObjMass : This slider affects directly the objects masses, making them lighter or heavier.

Force Limit : This slider sets a limit on the calculated force on each object. Lower limits will smooth out abrupt motion and will create an aquarium effect. Higher limits can introduce bullet like object speeds.

TimeWarp : A new feature introduced on Creation v1.3. Creation calculates an entropy value for its current state. Meaning that, if the objects are moving fast around the entropy will be high, and if they are slow and more together positioned the value will be small. With the **TimeWarp** turned on, this new feature slows the system time when the entropy reading exceeds the max limit set by the user. Or it speeds the time when

the entropy reading is lower than the min limit. The result is smooth accelerando / decelerando changes in the object movements.

Env Trans : Objects decide which envelope to use by checking the distance to each Mass. Hence if the relevant object is closest to Mass2 then it will use the Env2. And since the objects are in continuous motion, this selection changes the moment the closest Mass changes. This slider value decides how abrupt this change will happen. If it is zero, then the change is sudden but with larger values, the transition happens smoothly between different envelopes.

Pitch Trans : As on the case with envelopes, Objects decide which pitch value to use by checking the distance to each Mass. Hence if the relevant object is closest to Mass3 then it will use the Pitch Center value of Mass3 (+ the pitch modulation if there is any).

And since the objects are in continuous motion, this Pitch center value assignment changes the moment the closest Mass changes. This slider value decides how abrupt this change will happen. If it is zero, then the change is sudden but with larger values, the transition happens smoothly between different pitch centers.

This slider also works in tandem with the TuningScale selection. To obtain the full TuningScale effect, the transition should be at %100. When it is at %0 , the Mass Pitch Center's will have the full effect on the object pitches.

Dist / Vol curve : It is a structural fact that the volume of Object depends on the distance to the Mass. This is a weighted distance calculation taking account the distances to each Mass and the masses are listed from closest to furthest. Then the distance values are normalized accordingly. Naturally the closer to the Mass the higher its volume. However this slider applies a curve to this relationship. The explain it in a simple way, a low slider value will make the object sound only if it is really close to the Mass object. With distance the volume level will decrease quicker. A high slider value will bring the further objects make them sound with higher volume, likewise all the objects will be sounding more in the foreground. With increased distance, the object volume will decrease also but slower.

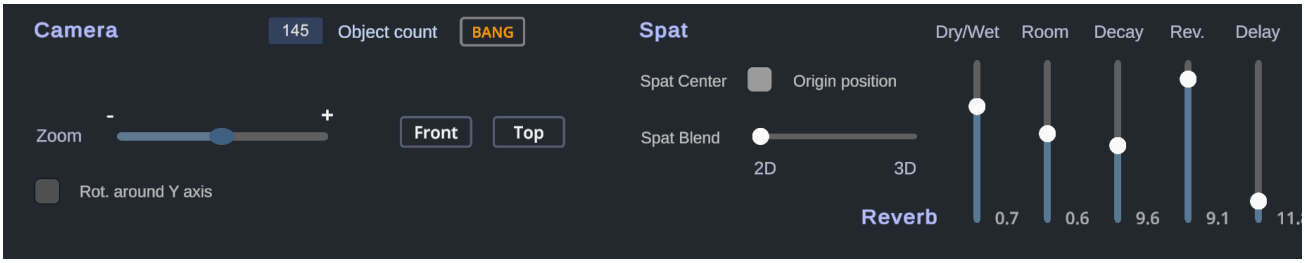
TuningScale : You can select here a tuning scale which will quantize the pitch value of each object according to the selected scale. As explained above, the TuningScale

works in tandem with the Pitch Trans slider setting. For full TuningScale effect the slider setting should be at %100.

CAM / SPAT PARAMETERS

The Creation app is built on a 3D scene and its dynamic actions take in a 3D space. To obverse these, there is naturally a camera positioned in a certain distance from the zero point (0, 0, 0) coordinates of the space and remains locked into that direction.

We can describe the camera as the viewers position as well, we constantly look towards the center origin of the space. The Cam/Spat panel has some settings acting on its behavior.



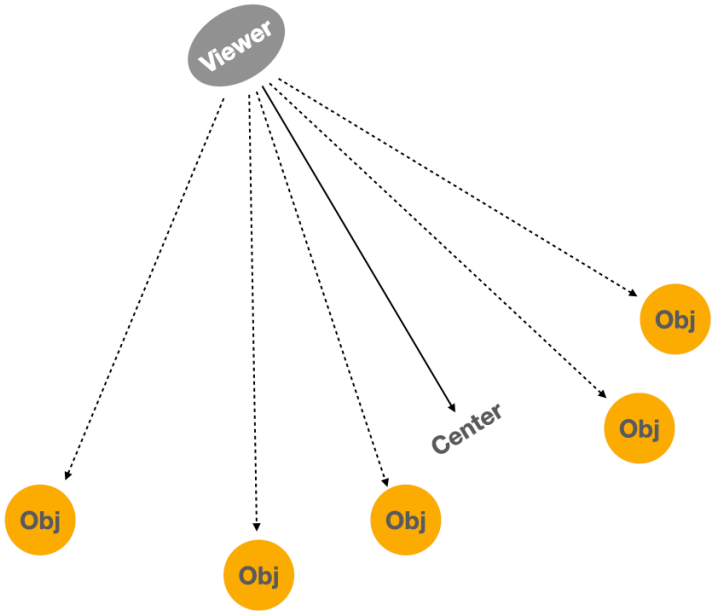
Zoom slider : This is a + / - bi-state slider. On + state, the viewer approaches and moves towards the center origin point of the space. And on - state, the viewer moves away for it. There are also the "**I**" and "**O**" keyboard shot-cuts achieving the same function.

The **Front** and **Top** perspective buttons changes the location of the viewer and therefore the viewing area.

The **Rot around Y axis** button rotates the camera slowly around the Y axis and always looking towards the center point.

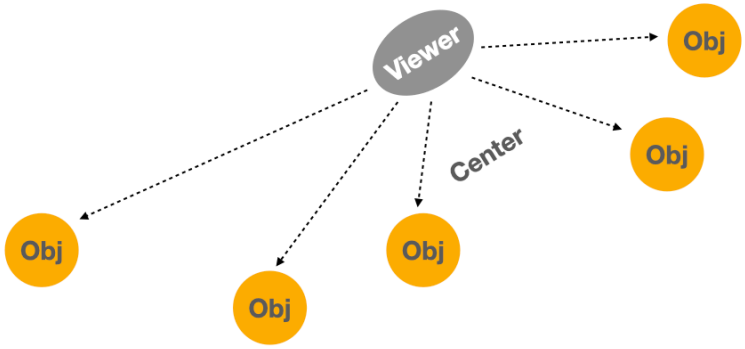
The **SPAT** section on this panel controls the stereo image of the objects and acts on how the spatial audio is being calculated for them.

Spat Center : This button changes the reference point to be used to calculate the spatial positioning of each object , therefore the stereo imaging.



Assuming it is on **Cam position** check the figure on the left as an example case.

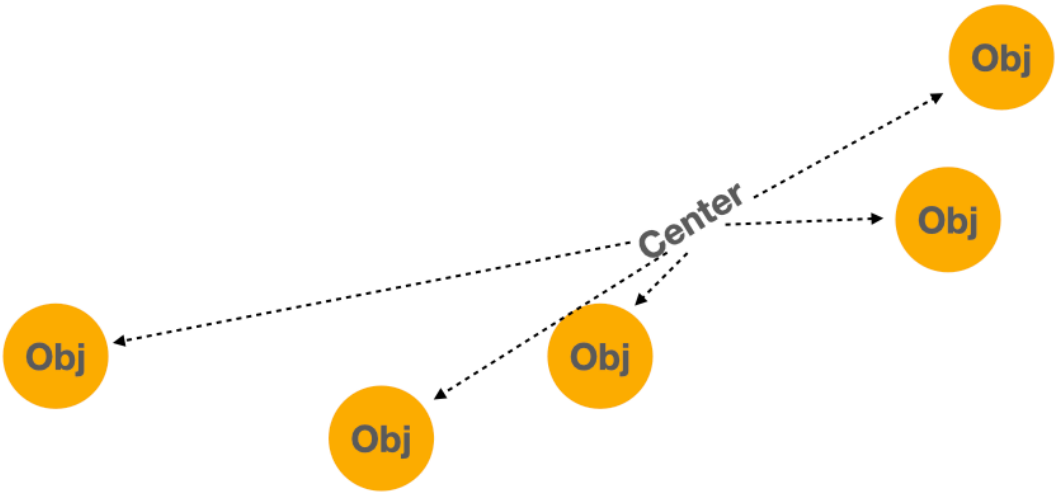
The viewer / cam position and each object position creates an angle to define the stereo imaging of the object. As the viewer looks towards the center, objects close to the center remain around the middle of the stereo field.



Now assume that the viewer has approached the center point as on the figure on the left. The viewer creates much larger angles with the objects and therefore the stereo image has been widened up.

If the Spat Center is set to Center Position , then the stereo imaging calculation uses the center position for calculating the angles. The figure below explains this.

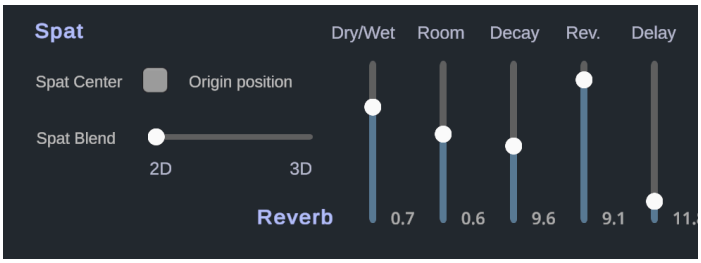
Spat Blend : When this slider is set at 2D position the spatial effect is exactly as explained above. And settings towards the 3D position will take into account the absolute distance of the objects from the viewer position for additional gain level



calculation (absolute distance and not weighted.) This creates a more realistic spatial positioning taking into account of the distance and the angle like in real world.

Reverb Controls:

Creation comes with a high quality reverb which sits on the last chain of the audio processing path.

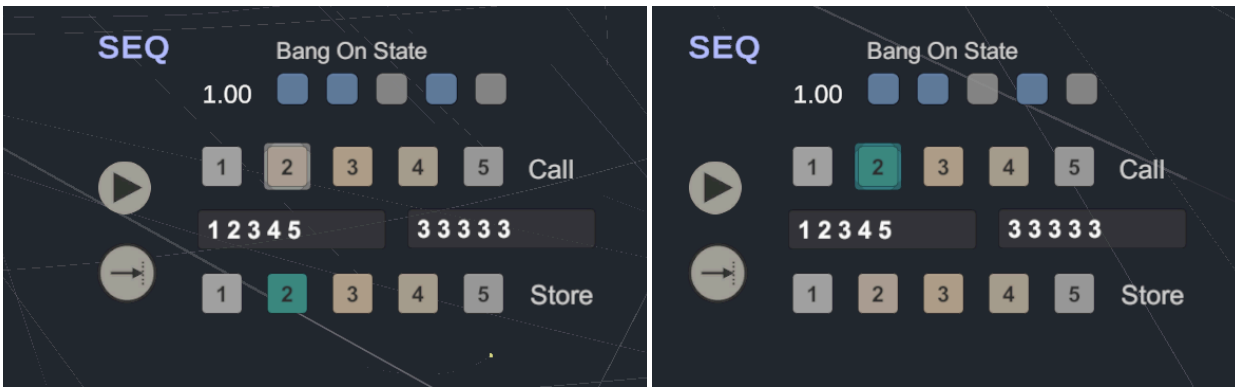


The reverb parameters are pretty standard as you will see from their labels.

PRESET / SEQ PARAMETERS

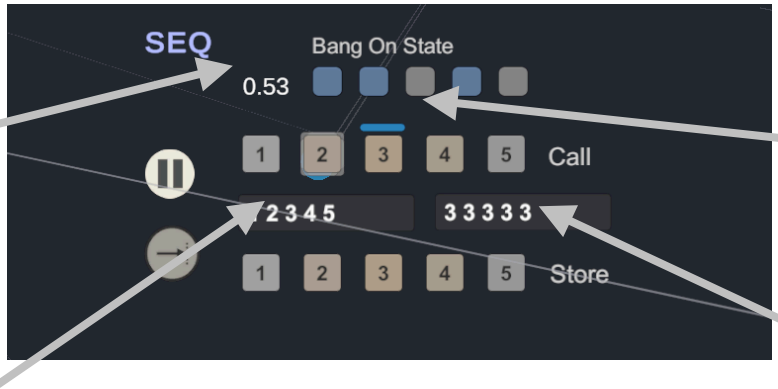
The Preset / Seq panel has both the preset handling controls and also a state morphing sequencer and its dedicated controls. For the preset handling controls please check the beginning of the manual.

The Seq Panel: The idea of the sequence panel is basically storing all scene parameters / panel parameters of the Creation app as individual states and call these states back with various options.



Creation offers 5 state slots where you can save 5 unique states of the scene. There are 5 numbered buttons dedicated to each of them, you can use the ones on the upper row to call back the saved states. And In order to store a scene state, double click on a button on the bottom row. (the button surroundings will flash within a successful store action)

All this is nice but how about a continuous transition from one state to another ? For such an audio-visual morphing process, we need to set the duration / how long it will take between states in transition.



state transition pointer

current state during sequence playback

state sequence field

durations field

In order determine the transition durations between states, type on the ***durations field*** (indicated above). The first number will set the transition duration (in seconds) between state 1 and state 2. The second number will set the transition duration (in seconds) between state 2 and state 3. this will go on like that...

Attn *: Always leave a space between numbers and hit enter when you are done.*

On the example case above, the transition duration between all states is set to 3sec, If there is no duration set for a certain state transition, the default duration value will be valid.

We can also automate the state transitions by typing its sequence on the ***state sequence field***. You can use the state numbers 1,2,3,4,5 in any order.

Attn *: Always leave a space between numbers and hit enter when you are done.*

In order to achieve that animation you have to start it with the switch at the bottom middle. When active, it will be on the **play mode** and when not, it will remain on the **pause mode**.

This will perform the defined state sequence. This can be a one shot performance or a looping one.

In order to loop a sequence of states, the sequence should not start and end with the same state.

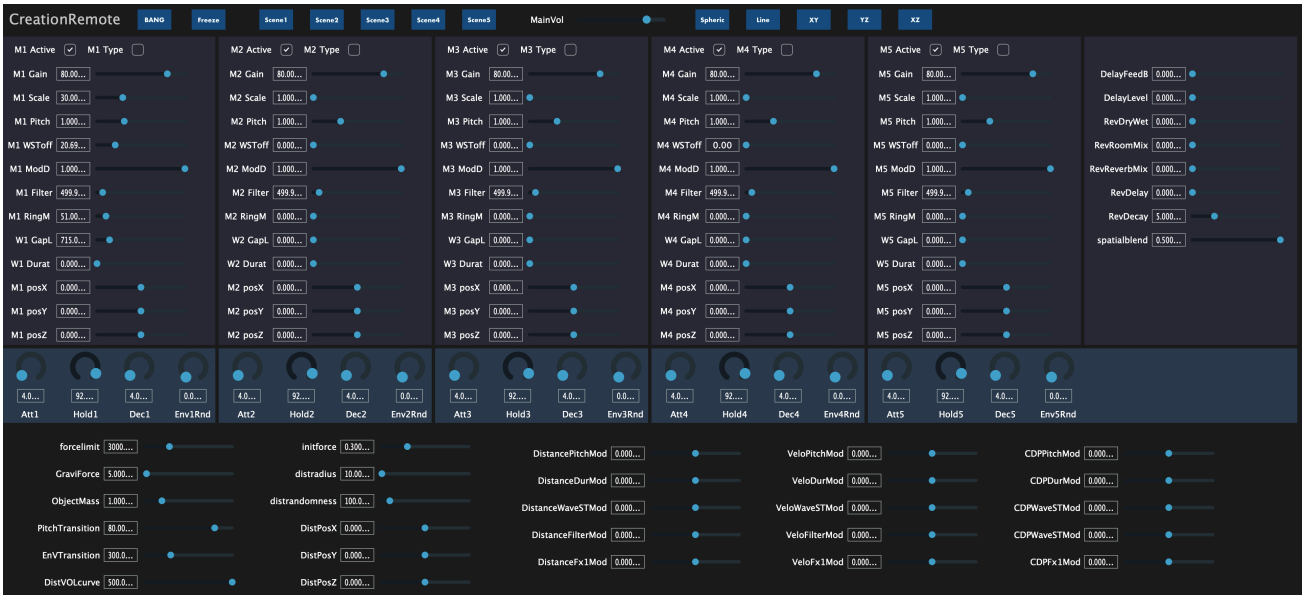
During a transition between states, you will see the state transition pointer counting from 0 to 1. During a sequence playback the current state will be shown with a blue line over the state box.

All these scene states and sequence settings are part of a Creation preset.

On OSX , you can use the key combination **Right Shift + state no** to call a state. And use **Left Command + state no** to store your current scene on a state slot.

CREATIONREMOTE AU/VST3 HELPER PLUGIN

We have developed a helper tool, a AU/VST3 plugin which the users can open on their DAW's and communicate directly with the Creation app.



Please understand that the purpose of this helper plugin is not to represent the Creation interface as it is but deliver all the parameters of Creation directly as sliders and buttons organized as simple as possible.

All the parameters of the Creation app will be available to your DAW as plugin automation. Therefore you can create a score-like control by using the facilities of your DAW and run Creation remotely.

You can also assign MIDI continuous controllers or midi button switches to any slider or button of the Creation Remote interface.

The advantage of plugin automation control over the standard midi controller message is that the automation control can communicate with the same resolution of the destination parameter where the Midi controllers send values between 0-127 (7bit) . This will hopefully change with the standardization of Midi2.0.

We have to add that all the trigger buttons on the CreationRemote are acting as 0 / 1 switches on the DAW plugin automation interface. Either value works, and triggers the destination parameter as expected. For instance , when you automate the “Bang” button, you can send a “Bang” event with both state 1 or state 0.

OSC REMOTE CONTROL FOR CREATION

The parameters of the Creation can be controlled with OSC[1] (Open Sound Control) protocol. This allows a control message resolution exactly matching the destination needs. For instance the M1 frequency setting can be between 44 - 1320Hz and for example this value can be send directly with a message like “creation/M1PitchCenter 1200.0” .

Remind that all value fields after the OSC addresses should be in floating point numbers. (for example type 1.0 instead 1)

Below, you will see full list of OSC messages addressing the Creation parameters.

[1] OpenSoundControl (OSC) is a data transport specification (an encoding) for realtime message communication among applications and hardware. OSC was developed by researchers Matt Wright and Adrian Freed during their time at the Center for New Music & Audio Technologies (CNMAT). OSC was originally designed as a highly accurate, low latency, lightweight, and flexible method of communication for use in realtime musical performance.

Important : In order to send the OSC messages to Creation, you need to connect with the port number **8889** of Creation.

OSC messages addressing the **Mass1** parameters ;

/creation/M1Gain	range : 0.0 , 100.0
/creation/M1MassScale	range : 0.0 , 100.0
/creation/M1PitchCenter	range : 0.1 , 3.0
/creation/M1WSToffset	range : 0.0 , 100.0
/creation/M1ModDepth	range : 0.0 , 1.0
/creation/M1FiltFreq	range : 50.0 , 7000.0
/creation/M1RingFreq	range : 0.0 , 500.0
/creation/W1GapLen	range : 0.0 , 5000.0
/creation/W1Duration	range : 0.0 , 5000.0
/creation/M1posX	range : -5000.0 , 5000.0
/creation/M1posY	range : -5000.0 , 5000.0
/creation/M1posZ	range : -5000.0 , 5000.0

/creation/M1active range : 0.0 , 1.0

/creation/M1MassType range : 0.0 , 1.0

/creation/M1RingOnoff range : 0.0 , 1.0

/creation/M1FiltOnoff range : 0.0 , 1.0

/creation/Env1Attack range : 0.0 , 100.0

/creation/Env1Decay range : 0.0 , 100.0

/creation/Env1Hold range : 0.0 , 100.0

/creation/Env1Random range : 0.0 , 100.0

In order to address the M2, M3, M4, and M5 just change the index number on the parameter field.

List of systemic parameters :

/creation/Bang

/creation/freeze

/creation/GraviForce range : 0.0 , 200.0

/creation/ObjectMass range : 0.0 , 5.0

/creation/forcelimit range : 200.0 , 10000.0

/creation/PitchTransition range : 0.0 , 100.0

/creation/EnVTransition range : 0.0 , 1000.0

/creation/DistVOLcurve range : 10.0 , 500.0

/creation/initforce range : 0.0 , 1.0

/creation/objscalevariance range : 0.0 , 1.0

/creation/distradius range : 0.0 , 1000.0

/creation/distrandomness range : 0.0 , 1000.0

/creation/DistPosX range : -5000.0 , 5000.0

/creation/DistPosY range : -5000.0 , 5000.0

/creation/initdistmethod range : 0.0 , 4.0

/creation/DelayFeedBack range : 0.0 , 1.0

/creation/DelayLevel range : 0.0 , 1.0

/creation/DistancePitchMod range : -1.0 , 1.0

/creation/DistanceDurMod range : -1.0 , 1.0

/creation/DistanceWaveSTMod range : -1.0 , 1.0

/creation/DistanceFilterMod range : -1.0 , 1.0

/creation/DistanceFx1Mod range : -1.0 , 1.0

/creation/VeloPitchMod range : -1.0 , 1.0

/creation/VeloDurMod range : -1.0 , 1.0

/creation/VeloWaveSTMod range : -1.0 , 1.0

/creation/VeloFilterMod range : -1.0 , 1.0

/creation/VeloFx1Mod range : -1.0 , 1.0

/creation/CDPPitchMod range : -1.0 , 1.0

/creation/CDPWaveSTMod range : -1.0 , 1.0

/creation/CDPFilterMod range : -1.0 , 1.0

/creation/CDPFx1Mod range : -1.0 , 1.0

/creation/RevDryWet range : 0.0 , 1.0

/creation/RevRoomMix range : 0.0 , 1.0

/creation/RevDecay range : 0.0 , 20.0

/creation/RevReverbMix range : 0.0 , 10.0

/creation/RevDelay range : 0.0 , 99.0

/creation/spatialblend range : 0.0 , 0.5

/creation/scenerecall range : 1.0 , 5.0

/creation/scenestore range : 1.0 , 5.0

/creation/MainVol range : -.80 , 20.0

/creation/TimeWarp range : 0.0 , 1.0

/creation/minEntropi range : 0.0 , 1000.0

/creation/maxEntropi range : 0.0 , 1000.0

/creation/radialDist range : 0.0 , 1.0

/creation/randomDist range : 0.0 , 1.0

ABOUT LAURENT MIALON'S PRESET DESIGN

The presets of "Creation" are unique, and can be distinguished as an artwork by themselves processing the complex paradigm behind the audio-visual engine of Creation.

Laurent himself explains the functional aspects of his preset work as following towards the user :

" Sharing here a few tips I've come across making of presets ":

- when loading samples, try to guess (they input) their pitch to come up with meaningful harmonies using the tuning scale feature. Pay attention to the material

you load, ideally to avoid nearby masses to occupy the same frequency range. You can use the bandpass filter to mark the separation if needed.

- try to mix wavetables and samples, the latter adding texture.

- modulating the wavetables' gap length, as well as applying some ring modulation on them (and modulating the associated frequency) is another great way of adding grittiness. The same goes for samples, modulating their length, especially alongside the sample start will bring you in classic granular time-stretching territory. Playing with a modulated delay time on top of this is an excellent way of enhancing the particles movement.

- even if it goes without saying... be sure to use the masses as space sculpting tools, spending time adjusting the relative mass scales is essential. There are so many sweet spots to explore. You can use some masses as « silent » gravitational entities, they will force the particles to travel in their vicinity, the idea being to design a specific trajectory for the particles, beyond the sonification of the scene, which might come later on in the sound design process.

- play with the masses position dynamically, some masses can be really close by or even occupy the same exact position in space. You can achieve some fascinating sounding results by having the masses collapse in a single point during a state transition phase.

- do not ignore « repel », the strangest sonic results can be achieved with antagonist forces fighting against each other's.

General remarks :

When you playback the presets, be sure to try out all states, play them sequentially, and experiment with freezing the movement of particles (pressing the space bar). You will rapidly get used to literally play with Creation, coming up with you own sonic gestures. Also you should, from time to time, let a state play for a while, until there are almost no particles flying around. Observing the slow decaying of a pattern until nothingness is a true perceptual experience.

Random remarks and tips within specific presets :

19G : a somehow personal preset, playing with my own voice quoting Blaise Pascal.

50 Shades of Dorian : the variety of sounds obtained from one state to another is mostly due to the use of different initial distribution models, with also different radius settings. For instance, for state 1, we have a pseudo collapsing effect on start-up, as the value is different than 0 (as chosen for state 2).

Anvers 2 Stalingrad : every one who has taken the subway in Paris should recognize the specific tonality heard in this preset.

Apotres : it's possible to easily achieve the opening glissando effect with small values for Pitch Trans

ArchimsSoap : an essential parameter to play with is Dist/Vol Curve. For the third state, I wanted some pseudo continuous dronish voices, blurring the masses sounds, and to achieve this, this slider had to pushed to its maximum. By opposition, to clearly mark each mass sonic universe, the same slider value had to be reduced in state 4.

Aryabhata : to the difference of many presets states, there is no « bang on state » for state 2, somehow in memory of the great Indian mathematician, who was probably the first in History, 1300 years before JH Lambert proved it, to realize π is an irrational number.

Bottleneck : named after Karakoram's K2's deadly hanging serac. On state 3, the combination of a deep distance-based modulation of the bandpass filter with really slow particle movements helps evoking the frozen winds of the savage mountain.

Centauri : showcases notably the combined use of wavetables and samples. This is particularly obvious on state 5, where one can hear the thick wavetables followed by grainy textures. Setting a low value for the gravitational constant (Grav. Force) for this state allowed the particles to breathe accordingly.

Chute des corps : one thing that can be observed here is the use of different settings for Spat Blend. For instance, on state 5, low settings contribute to a feeling of proximity, and tend to enhance textures that would otherwise be blent.

Fluctuaciones : Mass1 has been associated with an orchestral sample for the first two states, for which some classic granular synthesis modulations has been applied. Modulating a very short delay time on top of this is responsible for the pseudo phaser effect.

Gurutvaakarshan : showcases notably the use of repelling masses

Heisenberg : between state 4 and 5, a long transition time has been chosen, revealing the effect on the modulated pitch. It can be fun to use these long morphing times to freeze the movement of the scene's objets, and listen to the glissando that keeps going.

Hendeka : unlike the last example, short transition times were used here. Creation can also be used as a pure SFX glitch generator. It works wonders when controlled from your DAW.

Isaac's New Tones : another example of the use of Spat Blend to give a specific impression of space, on top of having the masses collapse on themselves. Check the transition between 4-5

Kuiper Belt : uses one of the many scales designed by Wendy Carlos. Importing your own scales in scala format is really worth the experience, and can be tried any time on a previously designed preset.

Mevlâna : state 2 - that specific preset was designed the day the great Eduard Artemyev passed away, Solaris fans will understand why. Modulating the delay time and Gap Length is responsible for the « hallucinatory highway » effect.

Namche Bazaar : state 5 - the key to achieving such an effect is to have both the gravitational constant and the distribution radius equal to zero.

Pantheismes : do not forget you can fully automate the reverb from your DAW, which works particularly well together with Spat Blend.

Pillars of Creation : state 2 showcases the use of specific delay times to create a nearly intimate space.

Ponderation : state 5. Force limit has been set close to its minimum, so much is to explore with low settings for this essential parameter.

Rails : state 1. Do not hesitate to hit « bang » at will, on top of any back and forth transition and « freeze ».

Schmetterlinge : mixes wavetables and samples made on my eurorack system.

Singularities : state 2. Chosing a specific sample duration for the second mass is responsible for the desired beating of another home made modular-based sample.

Tombales : state 4. By chosing a high value for Scl. Vari it's easier to get some organic sounding results.

Worm Hall : every reverb seems to have a warm hall preset, Creation can be seen as a shortcut to new multiverses, otherwise known as a worm hole.