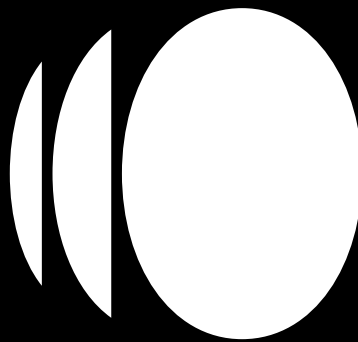


Tela
Modal synthesizer



User guide



Modal synthesis is often at the edge of the uncanny valley, with a character that is reminiscent of natural sound yet starkly synthetic and digital.

Historically it's been used for physical modeling, replicating real-world sounds.

With Tela we wanted to explore the inherent voice of modal synthesis, going beyond emulation and instead looking inward.

Sometimes it feels like a practical joke, Tela navigates between perfect symmetrical waveforms akin to analog synthesizers only to devolve into alien textures a minute later. It makes you question what is even happening.

We invite you to create with this instrument, find new sounds and modes of expression that might be unexpected and wild. It's unconventional, and we love it.

Contents

Overview & Installation	1
Modal synthesis	3
Basic layout	4
Clicking & dragging	5
Sticky parameters	6
Parameter pages	7
Patch	8
Impulse	10
Grain	12
Tonality	14
Contour	16
Space	18
LFO	20
Presets	25
Settings	26
Credits	27

Overview

Tela is a synthesizer plugin for macOS in the AUv2 and CLAP format, compatible with any DAW or plugin host that supports either. It's built from the ground-up on a modern tech stack, with focus on making it feel lively, fun, and reliable.

Utilizing modal synthesis, Tela orchestrates 128 bandpass filters per voice which form one mass of sound. While typically used for physical modeling synthesis, Tela focuses on modal synthesis own inherent characteristics and capabilities.

Tela models nothing– it's an instrument for the here and now.

Installation

To install Tela, download the Tela installer package (pkg) from Fors.fm and follow the steps once opened. You may choose to install either or both AUv2 and CLAP versions of the plugin. After installation you will need to restart your DAW or start a plugin re-scan.

Note that Tela is installed to the User Library (~/.Library/Audio/) and must reside there in order to function correctly. Please do not move it.

System requirements

Tela is compatible with Intel and Apple Silicon hardware running macOS 12 and up. We recommend either an Intel Mac post-2018 or any Apple Silicon Mac for the best experience. Tela is compatible with hosts running under Rosetta 2 but we strongly recommend running natively if possible.

Activation

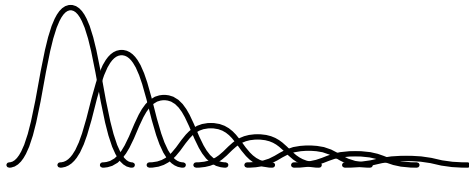
Tela requires an account on our website for activation (<https://fors.fm>) and the first time you open Tela you will be met with a login window from which you enter the same credentials as on fors.fm.

If you own a Tela license the plugin will activate on login, otherwise you will be asked if you want to start the 7-day trial version.

The 7-day trial is the full-featured plugin without any restrictions.

Note that once Tela is activated an internet connection is not required for continuous use.

Modal synthesis



Imagine hitting a thin piece of metal, a piece of glass or the membrane of a drum—the material vibrates and rings out with its inherent timbre, affected by the source of the impact and the strength of the hit. Scraping, brushing, hitting and plucking. These all affect the way the material reacts and what kind of sound it makes.

This is the basis of what modal synthesis is trying to replicate. Multiple bandpass filters, "partials", strung together as a "modal bank" are used to create a model of a material, while various input sources are fed through the filters to actuate them, causing them to ring out and react. The filters are then tuned, attenuated and dampened to achieve different kinds of timbres and textures. This is not dissimilar to additive synthesis, a method where a large number of sine waves form a single complex sound, but with a unique organic quality and an otherworldly tone.

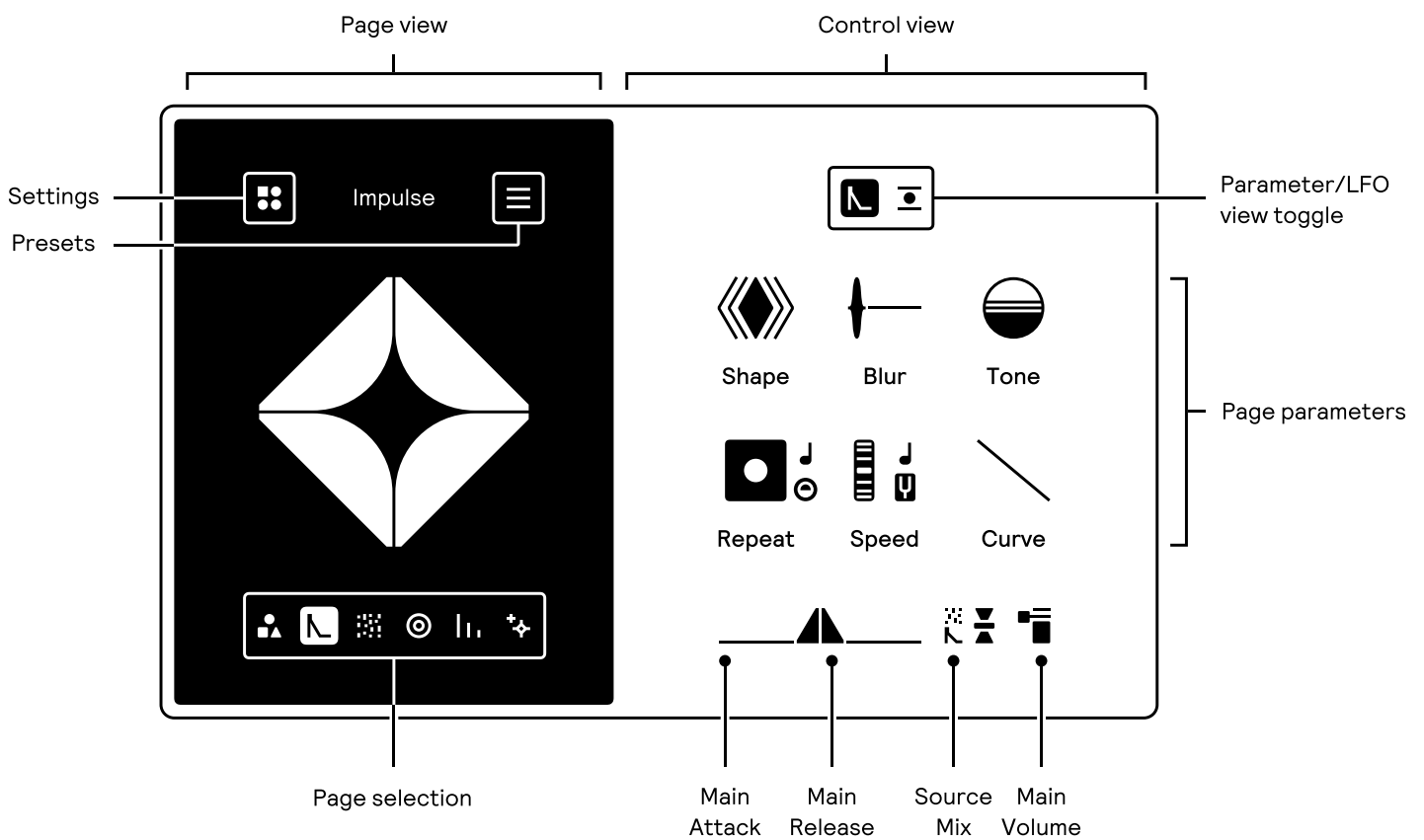
While modal synthesis is often used to replicate acoustic sounds, it's a powerful method in its own right, with an idiosyncratic sound and capabilities that go well beyond mimicking physical materials. In Tela we strive to present modal synthesis as its own voice, without the confines of emulation.

The result is something of a combination between additive and modal synthesis. An amorphous instrument with an emphasis on audio rate control of every single amplitude and frequency, parametrized in an easy-to-grasp interface akin to traditional synthesizers.

Basic layout

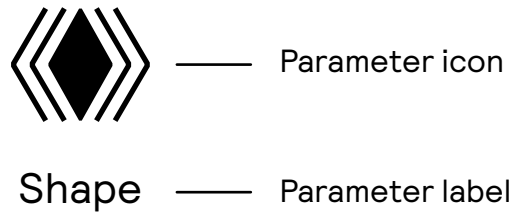
Tela's layout is based around the concept of pages— each page covering a different aspect or component of the sound engine. When navigating to a page, you are met with a visual representation on the left and its controls to the right.

Each page also has an LFO modulator attached to it which can be used to modulate any of its six main parameters.



Underneath the control view there are a handful of parameters that affects the sound engine on the whole, such as the dynamics of the voice and balance of input sources. These are referred to as the "sticky parameters" and are useful to always have at your disposal on every parameter page.

Clicking & dragging



All parameters in Tela are represented by a unique icon which is used to change the value. When you click and drag on the icon, the parameter label will change to show the value of the parameter as it changes.

You can click on the label to show the value at any time, and double click it to enter the value manually via your keyboard.

You can also reset values to their default setting by double-clicking the icon.

If you hold down Shift while dragging, the sensitivity of the drag will increase for finer control of the value.

Sticky parameters



On every parameter page there are a handful of controls that will always be available underneath the page parameters. These controls adjust things that are always important to have access to regardless of page and pertains to the overall control of the voice.



Main attack

The attack envelope is a logarithmic fade-in of the sound, and is the only "real" envelope in a sense. It does not affect anything in the modal bank, meaning that it acts on top of the output of the voice and does not have any impact on the release time.



Main release

The release time is controlling the resonance of each filter partial, as in how long it takes for it to ring out. Technically this is not an actual envelope but an organic part of the synth engine and changes how the modal bank reacts to input.



Input balance

Input balance controls the balance between the two input sources– Impulse on the bottom and Grain on the top.









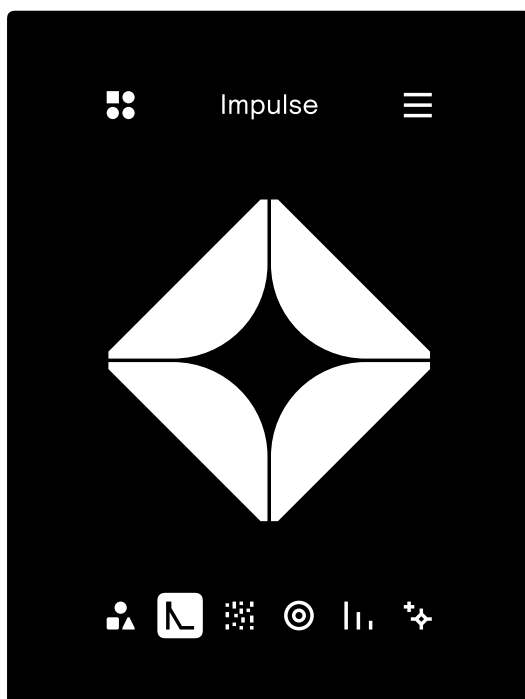
Main level

Main level adjusts the output level of the voice.

Parameter pages

Each page in Tela represents a different element in the sound engine and has a distinct icon which is used to navigate between pages.

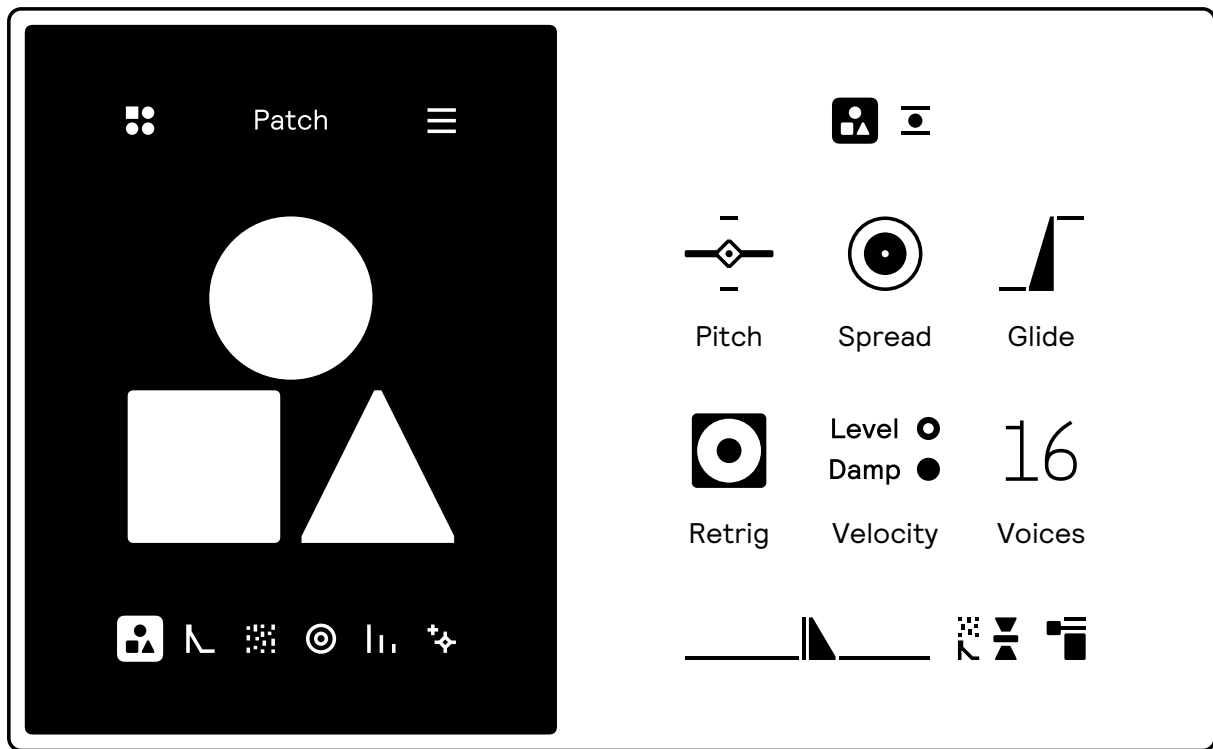
	Patch	Voice and patch configuration
	Impulse	Ratcheting impulse generator
	Grain	Variable grain generator
	Tonality	Modal bank frequencies
	Contour	Modal bank amplitudes
	Space	Reverb insert effect



The left half of the interface shows which page you are on, with the page icons at the bottom.

These buttons are used to change which page is currently being viewed.

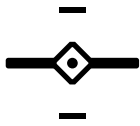
Patch



The Patch page concerns the overall patch or "sound" of the synthesizer. This means parameters that affect the sound at a whole, for example how many voices there are, what note velocity controls and the transposition of the sound. This can be thought of more as a settings page, but can be very powerful to modulate.

Note that the "sticky parameters" are destinations for the LFO on the patch page, which means that you can, for example, modulate the main release and volume via the patch LFO.

Patch Parameters



Pitch

Pitch controls the main pitch of the voice, it can be used to transpose the voice 48 semitones up or down, or slightly change the tuning by setting it to a non-integer value.



Spread

Spread adds a random panning amount to each voice on each note event. When at its maximum setting, each voice will be completely randomly panned per note for a widening effect.



Glide

Glide adjusts the portamento time of the patch, meaning the time it takes from one note's pitch to continuously glide to another. When a patch is set to Mono the glide will act on legato play only, meaning that only overlapping notes will cause a glide— much like how a classic monophonic synthesizer behaves.



Retrig

Retrig determines if the modal bank will be reset on each note on event. By default this is enabled and will ensure that the modal bank is consistent in phase and transient response. Turning it off will make the filters respond in a more dynamic way and can in some cases sound livelier but much less predictable.

Level

Damp

Velocity

Velocity sets which aspect of the synthesizer is affected by incoming note velocity. By default it only affects the level of each voice, but enabling Damp will control the Damp parameter on the Tonality page as well. Lower velocities will result in more dampened sounds and vice versa. Velocity can be set to both, either or off.

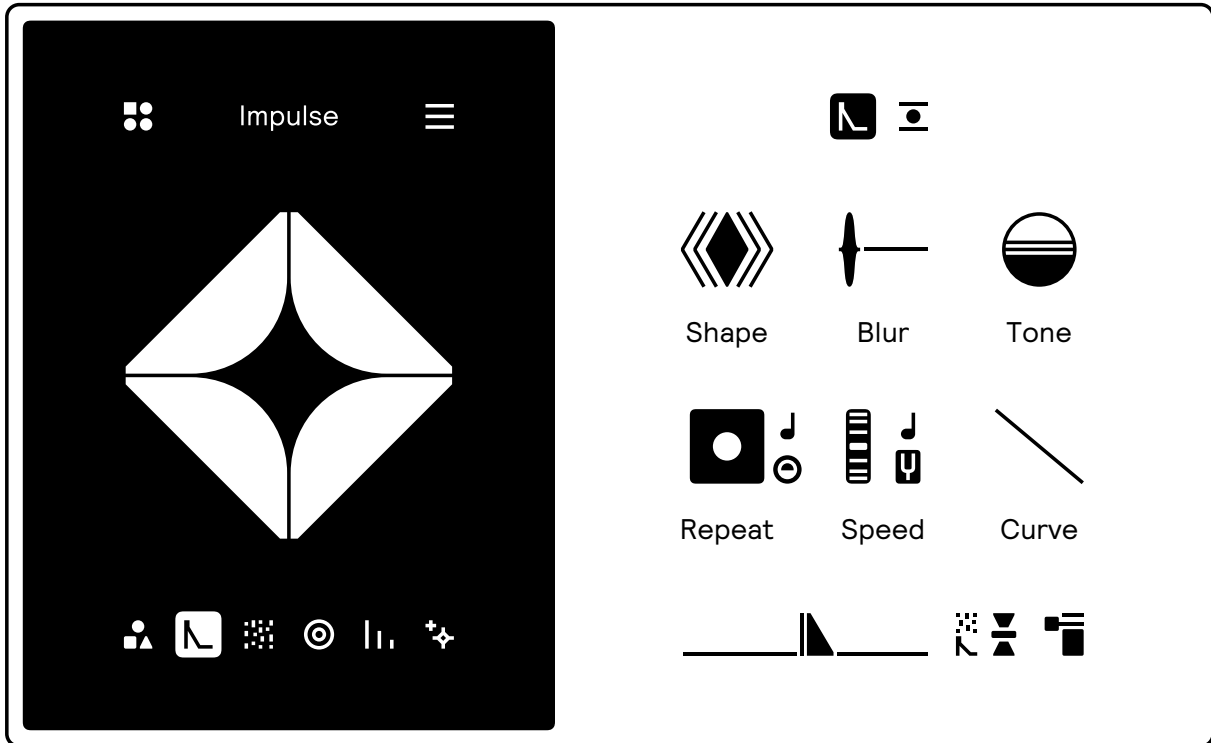
16

Voices

Voices controls the polyphony of the patch, as in the number of voices the synthesizer can play at once.

Setting this to a single voice changes the patch to play monophonically, which enables legato play.

Impulse



The impulse generator is one of two input sources that are used to actuate the modal bank. In its simplest form, it generates a linear ramp which "strikes" the bank, causing it to ring out with a linear response. By changing the shape and sound of the impulse it's possible to make the modal bank sound softer, sharper, attenuate certain frequencies or completely change its transient response.

The impulse generator also features a ratcheting functionality called "repeat" which can be used as a pseudo-echo as well as a looping rhythmical component. This does not repeat the actual sound at all, only the impulse itself which makes it an organic part of the sound.

To mix between Impulse and Grain, use the source balance fader

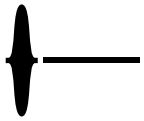


Impulse Parameters



Shape

Shape controls the shape of the impulse generator. The default setting (max) results in a linear ramp which can be considered the most neutral setting. By lowering the amount the impulse blends into a more sinusoidal shape which sounds a bit softer, down to more plucky at the lowest point.



Blur

Blur controls the amount of diffusion that's applied on the impulse signal. This effect basically softens the impulse generator on lower values while becoming almost reverberant at its extremes.



Tone

Tone controls the cutoff frequency of a lowpass filter applied to the impulse which is used to reduce harmonics and is useful for achieving a darker sound.



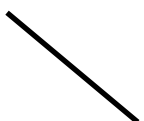
Repeat

Repeat controls the amount of times the impulse generator repeats per note event. This can be used to simulate an echo effect, or to play multiple overlapping notes in a repeating, rhythmic fashion. Toggling the note button will loop the repeat while a note is held. Toggling the contrast button will make the repeat fade out with both level and tone attenuation.



Speed

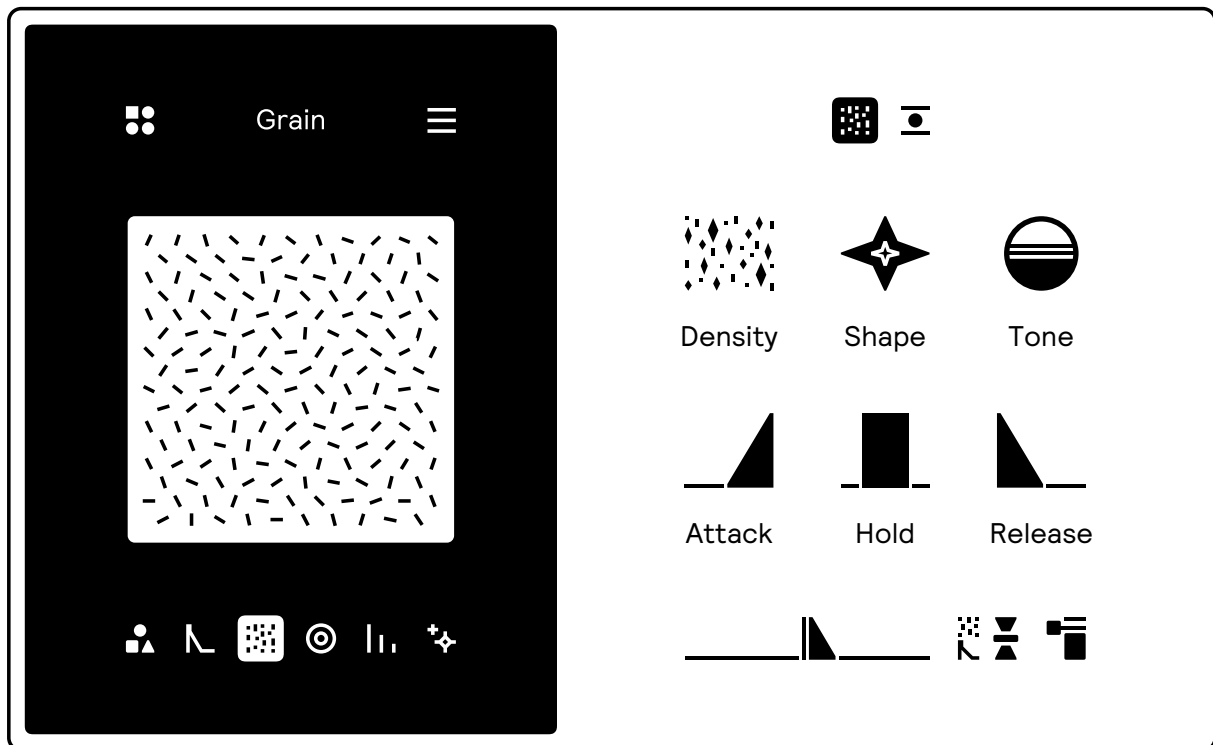
Speed controls the speed of the repeat. When the tuning fork is selected the speed is "free", meaning that it's not synced to anything. Changing to the note icon will lock the speed to a note value which is synced to the tempo of the host.



Curve

Curve controls the repeat timing distribution. By default this is linear, meaning that the spacing of each repeat is the same. By increasing or decreasing the value the repeats will get more or less dense at the start or end of the repeat phase.

Grain



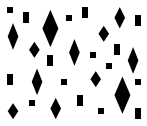
The grain generator is the second input source that can be used to actuate the modal bank and is a type of noise generator with adjustable density and range. Whereas the impulse "strikes" the modal bank, you can view the grain generator as "bowing" or "blowing" into it. Unlike the impulse, grain can be used for continuous actuation of the bank, which allows you to sustain the sound.

Unlike normal noise generators, grain is made up of tiny particles of sound playing at a fast rate, which at full density sounds close to white noise. As the density is lowered each particle will be more pronounced and will sound more like crackling.

To mix between Grain and impulse, use the source balance fader



Grain parameters



Density

Density controls how often each particle in the generator is played. When Density is set to a high value the output will sound close to a normal white noise. As Density is lowered, each particle becomes more distinguishable until it becomes sparse crackling.



Shape

Shape controls the base frequency of the particle tone, essentially a key tracking highpass filter. As the Shape amount increases, there will be less low frequency content in the sound resulting in a brighter tone.



Tone

Tone controls the upper frequency range relative to the Shape amount. Effectively, this turns Shape and Tone into a sort of variable bandpass filter where Shape controls the principal frequency and Tone controls the upper range. The less Tone amount the more narrow the frequency range.



Attack

Attack controls the initial fade-in stage of the amplitude envelope.



Hold

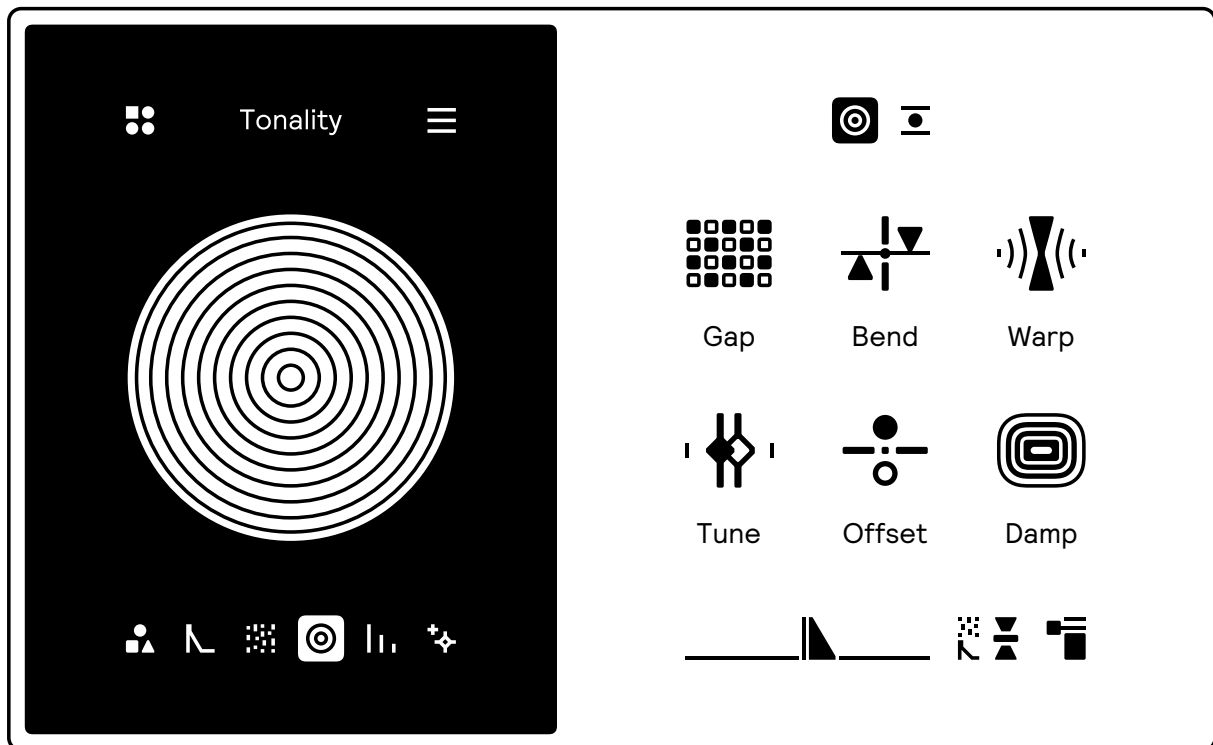
Hold controls the hold time of the amplitude envelope, which will sustain the output after the initial attack stage. When Hold time is set to its max value it will sustain as long as a note is held. This is denoted by a note icon appearing inside of the box.



Release

Release controls the final fade-out stage of the envelope.

Tonality

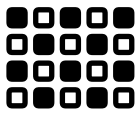


The tonality page controls the frequency ratio of each partial in the modal bank, which is a multiplication of the base frequency of the voice. (The base frequency being whichever note is being played.)

When all controls are set to zero, the ratios of the modal bank are all at an equal distance. Partial number one has a ratio of one, two a ratio of two and so on. If all partials have this linear trajectory and are actuated by a linear impulse the resulting wave will essentially be a perfect saw wave. This can be seen as the "blank canvas" on which you paint a new sound.

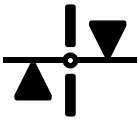
By changing this trajectory it's possible to greatly affect the timbre and tonality of the sound. Expanding or contracting the frequency relationship with different curves and patterns can result in wildly inharmonic and complex spectra.

Tonality parameters



Gap

Gap controls the equal distance between each partial. By increasing the gap, each partial will slightly drift apart until it lands on the next harmonic ratio. Every 10th of the parameter corresponds to a whole number gap amount and results in a harmonic timbre.



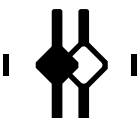
Bend

Bend controls the expansion or contraction of the partials. A positive value will increase the distance between each partial in a non-linear fashion upwards, resulting in a slightly inharmonic but sparse sound. A negative value will decrease the distance, resulting in a denser, metallic and very inharmonic sound.



Warp

Warp adjusts the curvature of the bend parameter, which affects the distribution of the bend effect towards the upper or lower part of the frequency spectra of the modal bank.



Tune

Tune controls the inharmonicity of the sound, meaning that the higher the value the closer to a whole number each partial will snap. At full value every partial in the modal bank will have a frequency ratio that is equal to a whole number, which will ensure that they are all in tune with the base frequency.



Offset

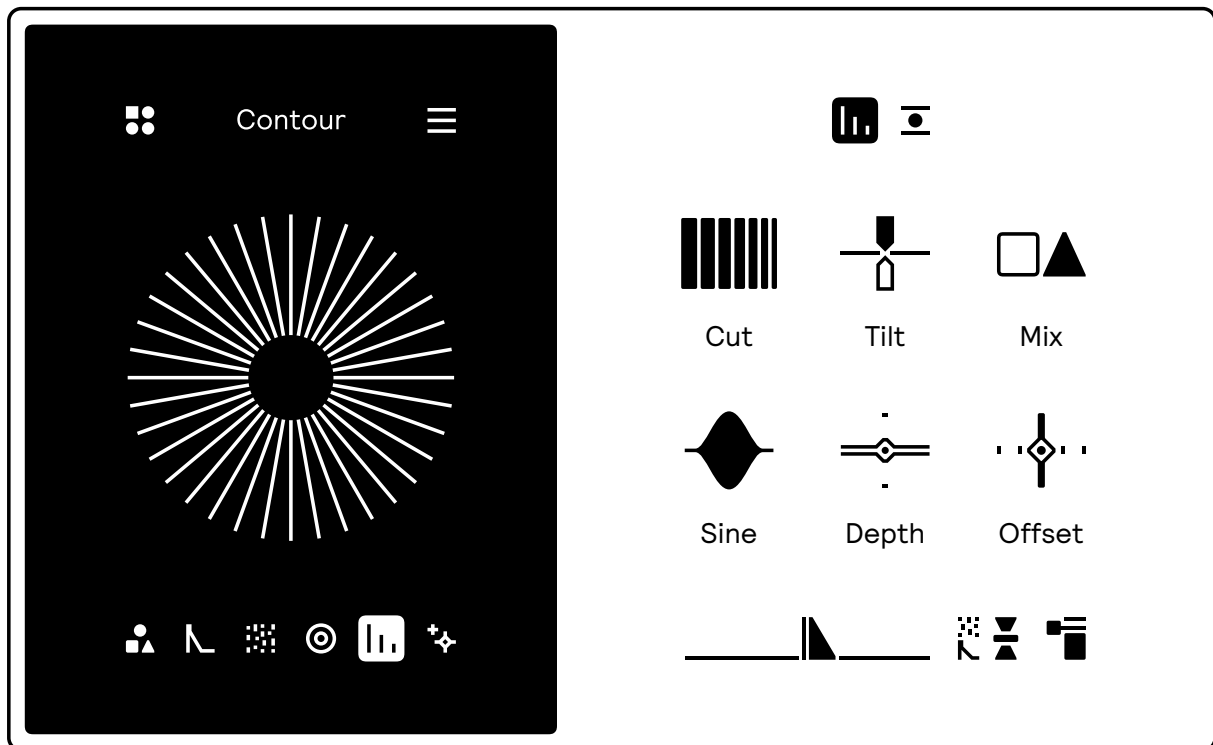
Offset controls a frequency offset on every other partial and can be up to one octave above or below the base frequency of the bank. Offset is unaffected by Tune and can be used as a final detuning or octave effect.



Damp

Damp controls the resonance of the filter partials, which affects how much they will ring out when they receive a signal. Higher Damp values will result in more high frequency loss over time (the "time" here being the main release) and will have a more natural sound.

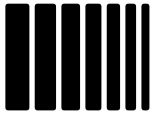
Contour



The contour page controls the amplitude of the partials in the modal bank. Much like the tonality page, the "neutral" state has a natural falloff towards the upper frequency range according to the way we perceive loudness.

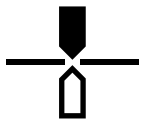
By reducing the amount of partials, balancing even and odd sides, and creating different patterns it's possible to completely change the shape of the sound without affecting the frequency content.

Contour parameters



Cut

Cut controls the partial count, linearly fading each partial out as the amount is reduced. Positive values will reduce the partials starting from the lowest to highest harmonic while negative values will reduce from the highest, resembling the effect of a very steep lowpass filter.



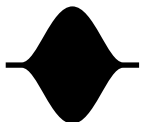
Tilt

Tilt adjusts the falloff of the partials, meaning the strength of each partial's amplitude the higher up it gets in frequency. The default setting results in a natural falloff, which is 1 divided by the partial frequency ratio. Turning tilt up changes this to a linear falloff instead, which results in a much brighter and nasal sound.



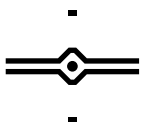
Mix

Mix controls the balance between the even and odd partials in the modal bank.



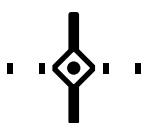
Sine

Sine applies a sinusoidal pattern across the modal bank, essentially creating a comb-like effect on the resulting waveform. Lower values results in a longer wave while higher creates a repeating pattern with more valleys and peaks.



Depth

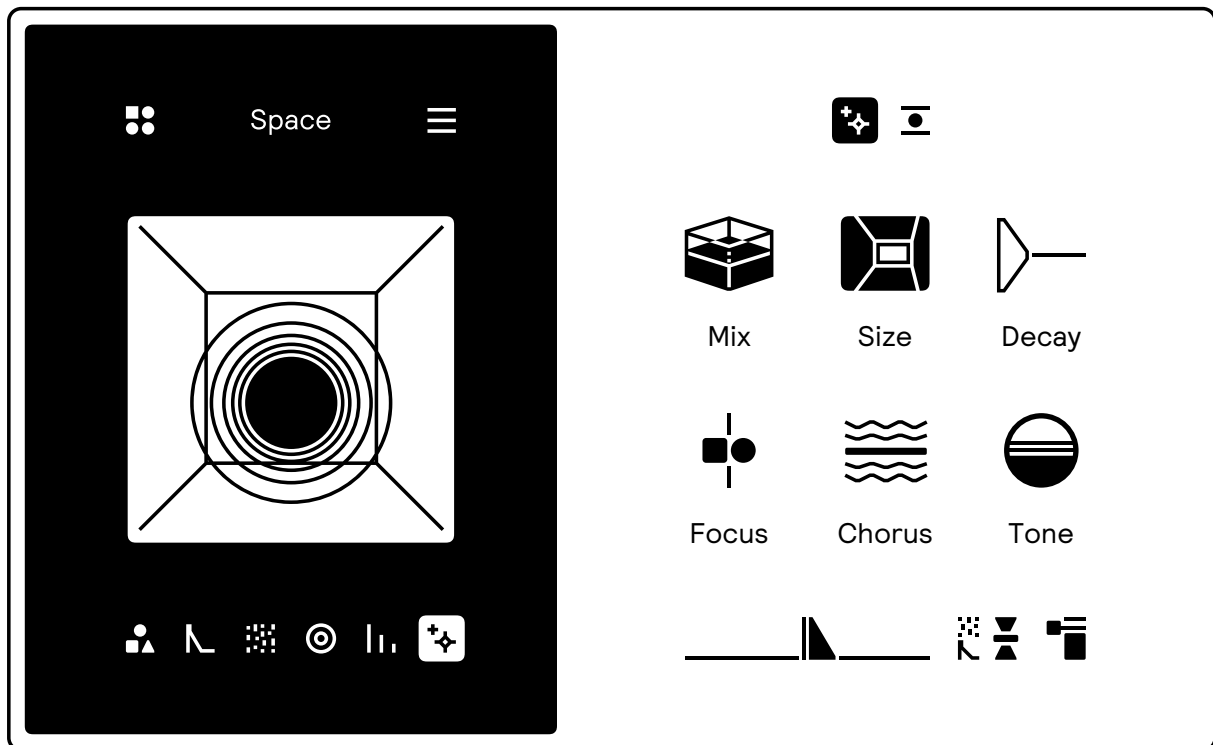
Depth controls how much the sine pattern affects the partial amplitudes. At very high values only the highest of peaks in the sine pattern will be heard, resulting in a much sparser spectra.



Phase

Phase controls the phase offset of the sine pattern which will move the peaks and valleys back and forward, which is useful for finding different patterns and variations.

Space



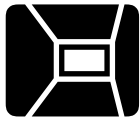
The space page controls the Space effect which is an algorithmic reverb that affects the main output of the synthesizer. Space is an insert effect so signal is always sent to the reverb wherein you then mix between the "dry" synth signal and the "wet" effect signal.

Space parameters



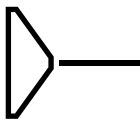
Mix

Mix controls the balance between the "dry" synthesizer signal and the "wet" reverb effect signal.



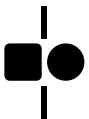
Size

Size controls the size of the reverb, which can make the reverb feel like a smaller or larger space. Larger sizes also take longer to decay, with a longer buildup time.



Decay

Decay controls the time it takes for the reverb to fully ring out.



Focus

Focus controls the balance between early and late reflections, meaning the initial hit of the reverb and its following "tail". More transients can be heard in the early reflections while the late signal is more diffuse. A negative Focus value will shift to a denser initial buildup.



Chorus

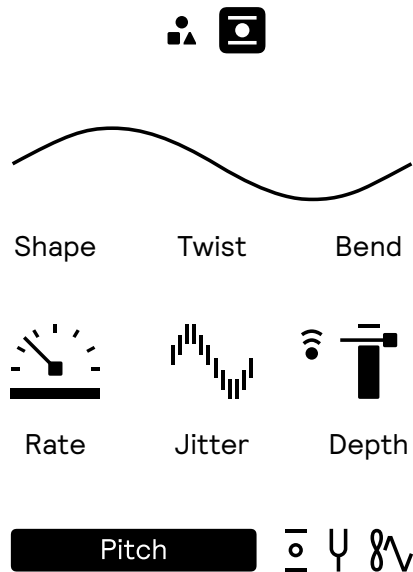
Chorus controls the amount of temporal modulation in the reverb, creating a chorus-like effect that essentially affects the pitch of the reverb's tail and makes it sound livelier. Larger reverb sizes and longer decays will exaggerate the modulation.



Tone

Tone controls the tonal balance of the reverb, with positive values resulting in a brighter tone and negative values darker.

LFO



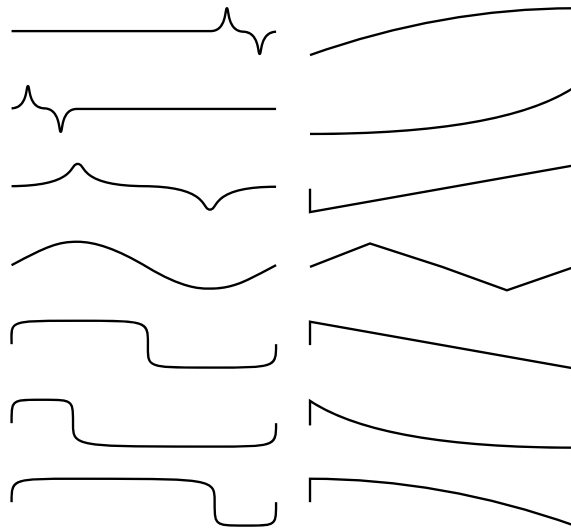
Each page has a dedicated LFO (Low Frequency Oscillator) modulation source which can be used to modulate any of the six main parameters of a page.

The LFO is built to be as flexible as possible with very few parameters. it can be used as a continuous oscillator, a one-shot envelope, sample & hold source as well as sync it to the BPM of the host or track the key of the incoming note.

The output of the LFO is bipolar unless the oscillation mode is set to Once, which makes it a unipolar one-shot modulator.

The button above each parameter page is used to switch between the LFO and the parameter view.

LFO parameters



Shape, Twist and Bend alter the waveshape of the LFO and can mould a multitude of different symmetrical and non-symmetrical shapes, with continuous control of the waveshape.

Shape mixes between a sinewave and a variable ramp, each reacting slightly differently to the Twist and Bend parameters.

Twist transforms the wave itself– positive amounts for the sinewave will taper it while a negative value will make into a squarewave-like shape. On the ramp, Twist will alter the slope of the ramp from a triangle wave to a saw wave or reverse saw wave.

Bend changes the curvature of the oscillators phase, causing a bend-like effects forwards or backwards. On the sinewave this will contract the wave in either direction while on the ramp it will make the ramp logarithmic or exponential, which is very useful for making snappy envelope shapes.

LFO parameters



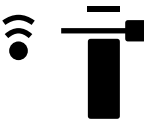
Rate

Rate controls the frequency of the LFO, which affects how fast or slow it goes. The rate can also be synced to the tempo of the host or as a ratio of the note being played.



Jitter

Jitter controls the amount of randomness in the LFO rate, when turned up the LFO rate will become more and more randomized which will make it warble and sway erratically.



Depth

Depth controls the modulation amount applied from the LFO to the destination. The button to the left will scale the depth from the incoming note velocity when enabled. This lets you adjust the LFO depth using note velocity.

LFO parameters



The bottom row of controls on the LFO view are used to configure how the LFO works, what it's modulating and what source it is synchronized to.

The big menu button to the left opens up the destination selection which lets you select which parameter the LFO will modulate.



Phase controls the phase offset of the LFO and can be used to change where in the waveform the LFO will start when triggered.

Phase



Rate mode

Rate mode changes how the LFO is synchronized. By default it's "free-running", meaning it uses its own internal speed. But it's possible to externally synchronize the LFO by selecting between the options shown below.



Free

Free running will let the LFO run unsynchronized, using its own internal speed.



Sync to
rhythm

Rhythm syncs the LFO to the tempo of the host and sets the speed in note values such as 1/16, 1/8.



Key track

Key track sets the LFO speed to a ratio of the current playing note.

LFO parameters



Oscillator
mode

The oscillator mode changes how the phase of the LFO is updated.



Free

A free-running phase never stops and is never interrupted, the LFO will continuously play its waveform.



Retrig

Retrig resets the phase on every note event.



Hold

Hold samples the current value of the free-running LFO and holds it on a note event.



Step

Step divides the LFO into several "slices" that are iterated through on every note event.

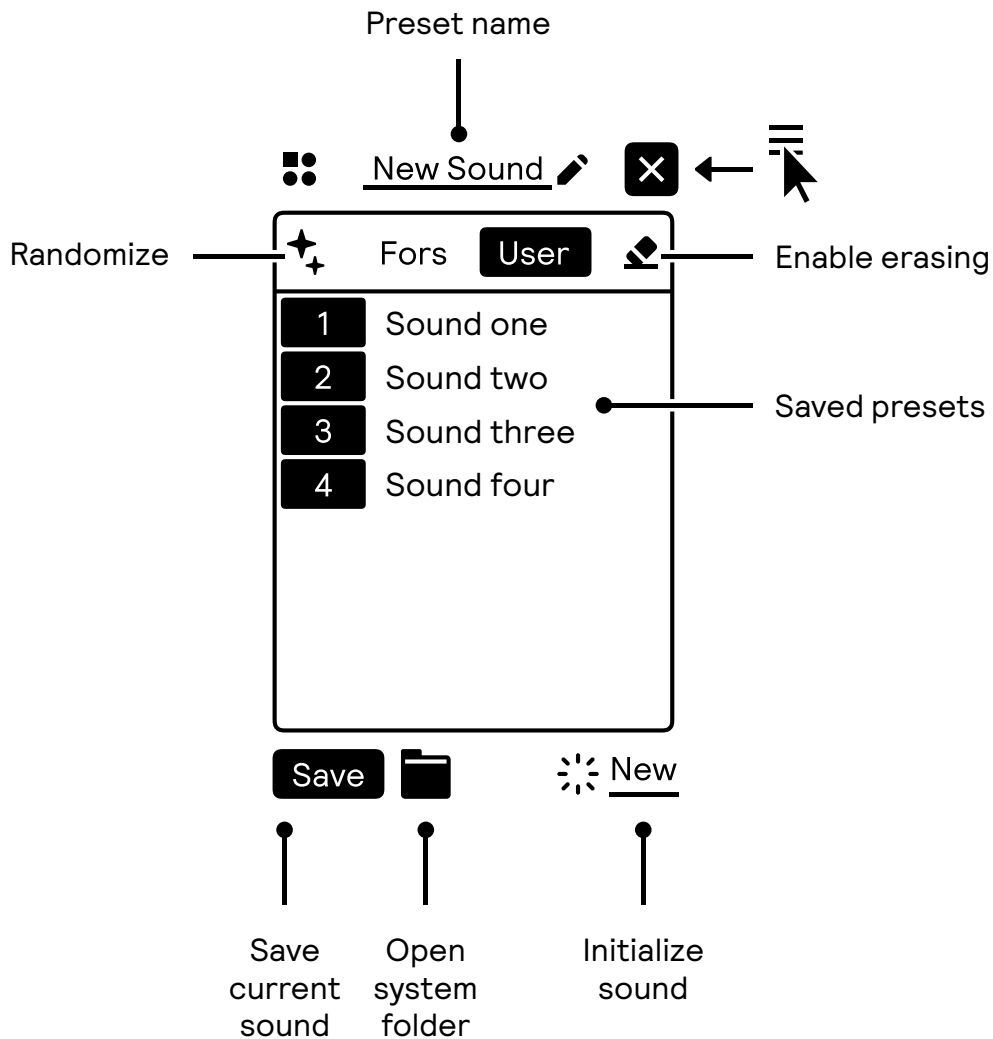


Once

Once will only go through the waveform once per trigger and is useful for creating envelopes or other form of one-shot modulation from the LFO.

Note that when in Once mode the LFO modulation will be unipolar, meaning it will only apply positive modulation.

Presets

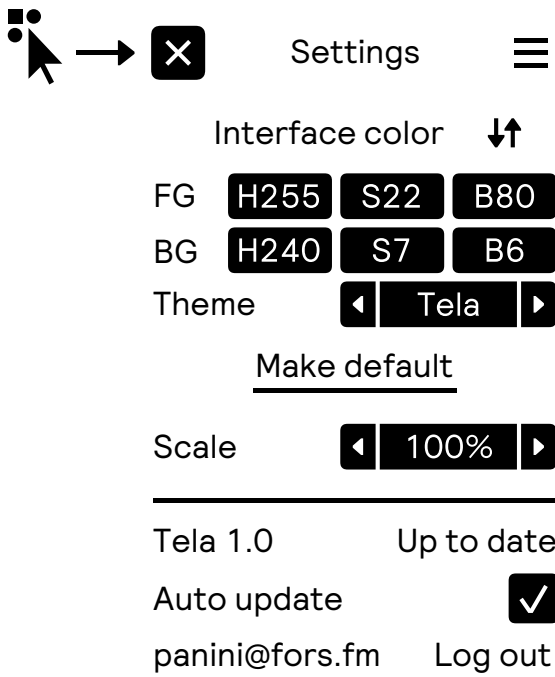


The preset browser can be opened by clicking on the browser icon at the top-right corner of the left side of the interface. Here you can browse, initialize, save and manage presets, as well as open the system folder where they are stored.

The presets are stored in a human-readable .json format and are entirely self-contained which you can share with other Tela users.

Here you can also generate a unique random preset which can have very unexpected results that you may not come across by manual parameter changes.

Settings



The Settings page is opened by pressing the icon at the top-left corner of the interface. Here you can change the color theme of the UI as well as set the interface scale, check the current version and how you prefer to get updates.

Tela receives automatic updates by default, which happens if there is a new update available on our servers. Tela will then fetch this in the background and the update will be ready the next time you start your host. You will receive a pop-up to confirm that Tela has been updated.

It is also possible to opt-out of automatic updates by unchecking the box. You then get a notification when a new update is available with an option to install it.

Interface color

This section lets you change the color of the Foreground (FG) and Background (BG) elements of the interface. The color values are in HSB, which stands for Hue, Saturation and Brightness. The arrows above can be used to flip the colors.

You can also choose from a handful of pre-made themes, press the arrow keys to browse and the middle button to confirm the selection.

Once you are happy with the colors you can press "Make default" to always use this color theme on a new instance of Tela.

Scale

This lets you scale the interface up to twice the size, in increments of 25%. Use the arrow keys to browse the sizes and press the middle button to confirm.

Note that this feature is currently unavailable in macOS 12

We hope you enjoy Tela

Ess Mattisson

Alexander Droste

Felisha Ledesma

Presets by

Angelo Harmsworth [AH]

Aho Ssan [AO]

Dataline (Cenk Sayinli) [DL]

Elin Piel [EP]

gab_i (Gabriel Gustafsson) [GG]

Beautiful Goblins (Justin Roselli) [JR]

KMRU (Joseph Kamaru) [KMRU]

M DeNardo [MDN]

Mark Fell [MF]

Pablo Doderero Carrillo [PDC]

Typeface by

Colophon Foundry

Fors

2024

