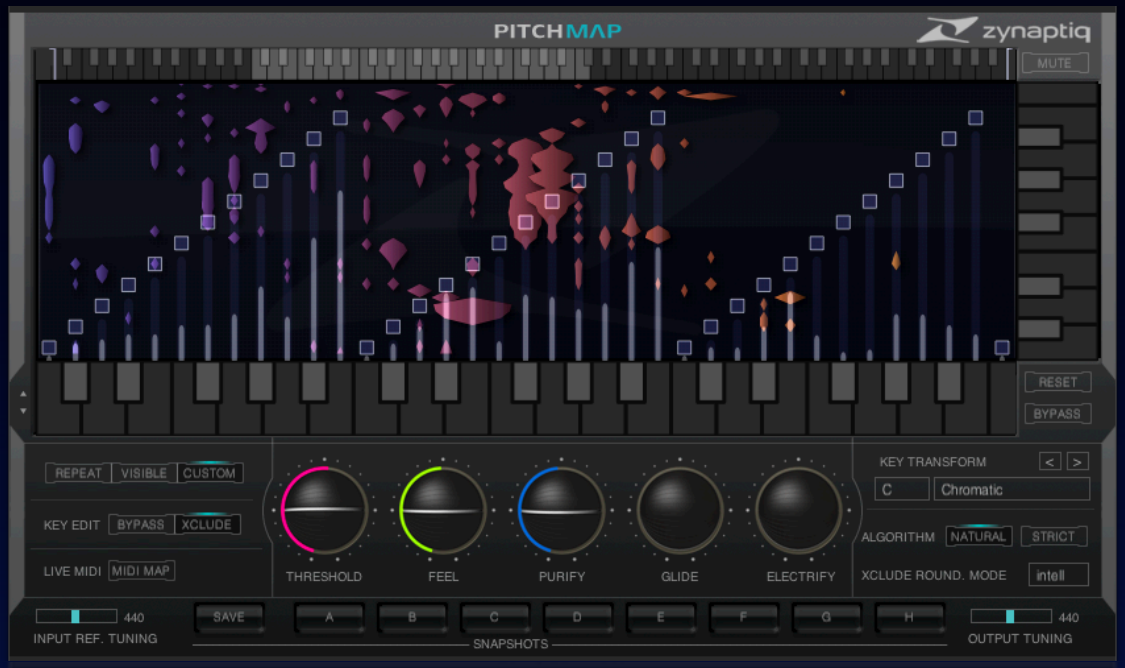
zynaptiq

PITCHMAP

Quick Start Guide V1.0



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Welcome To PITCHMAP

What is PITCHMAP?

PITCHMAP is the world's first and only real-time, polyphonic pitch correction and pitch mapping plug-in. Need to correct pitch inaccuracies on one instrument in a full mix or a polyphonic recording? Want to change the key of an entire song and simultaneously go from minor to major 7/9 on the fly? **PITCHMAP** allows you to do all of that, and more. To accommodate for modern musical genres and to open up a wide array of sound-design options, **PITCHMAP** also provides means of controllably making the process sound more synthetic in a very unique and evocative way.

Based on our proprietary **MAP** (**M**ixed-Signal **A**udio **P**rocessing) technology, **PITCHMAP** does all that by separating a musical signal into individual elements/sounds, including their associated harmonics and transients. Sounds to be processed are selected by their fundamental pitch, and their tuning can then be corrected or their pitches arbitrarily mapped individually, using pitch maps the user creates from within the GUI, or real-time MIDI data. On the fly and in unprecedented fidelity. The immediate nature of this process opens up new ways to intuitively interact with the compositional aspect of a recording, and unlocks a huge creative potential.

We sincerely hope you will enjoy using **PITCHMAP** as much as we did creating it. It is the culmination of 40 combined years of research and professional audio production expertise, and thus we are very excited to provide you with this unique and exceptional tool.

Now go create great audio!

Yours,
Stephan M. Bernsee & Denis H. Gökdag

zynaptiq headquarters
Hannover, Germany
January 2012

System Requirements

Mac Requirements

- Intel-based Apple Mac computer
- Minimum of 2 CPU cores running at 2.4 gHz or faster
- 1 GB of available RAM
- Mac OS X 10.6.x or newer
- 200 MB free Hard-Disk space
- Apple AudioUnits (AU) compatible host software
- Internet Connection for Activation (though not necessarily on the Computer used for audio)

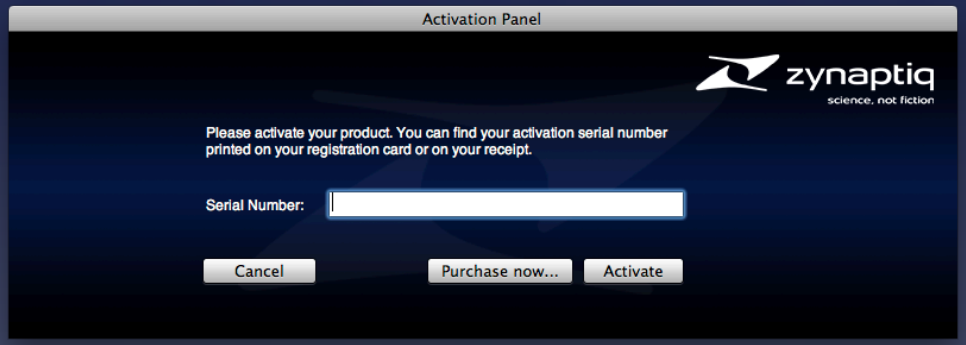
Note: this is an AudioUnits (AU) plug-in, and thus not compatible to Avid ProTools until we release an AAX version.

Installation

Installation & Authorization Mac

Installing and authorizing **PITCHMAP** is very straight-forward. Simply mount the disk image file (.dmg) by double-clicking it in the Finder, and launch the installer contained on the resulting, auto-mounted Volume. Follow the on-screen instructions to install.

To be able to use your new software, it needs to be activated. Upon the first time you instantiate PITCHMAP, you will be presented with the activation dialog:



Enter your serial number and click “Activate” and you’re good to go.

Overview

Features At A Glance

PITCHMAP provides all of the following functionality in real-time:

- Automatic correction of pitch inaccuracies in polyphonic and mixed signals
- Mapping of source to destination pitches via the GUI
- Definition of destination pitch grid via live MIDI
- Process bypass on arbitrary notes selected by their fundamental pitch
- all of which leaves non-pitched signals like drums virtually untouched
- Suppression & Extraction of mix elements based on their pitch using *Mute Filters* via GUI or MIDI control
- Continuously variable unique synthetic coloration options via parameters *Electrify* and *Purify*
- Polyphonic portamento/glides using the *Glide* parameter
- High-speed workflow: options to rapidly generate complex pitch maps using macro controls
- Snapshot functionality to allow rapid creation of automation
- Stereo Mac AudioUnits plug-in supporting 44.1kHz and 48kHz sampling rates (higher rates being worked on)

Applications and Usage Scenarios

PITCHMAP has quite a lot of uses. Here are a couple of them.

- Fixing tuning inaccuracies in mixed signals
- Adapting one recording, song, loop or sample to fit another
- Playing own compositions using a recorded song or loop as an “instrument” using live MIDI input to map pitches
- Changing the key/scale of a recording/song/loop/sample
- Changing the pitch of individual notes within a recording
- Suppressing mix elements
- Extracting/Isolating mix elements
- Rapid song prototyping
- Creative sound design
- speeding up sample-based music production, re-mixing and mash-up creation workflows significantly

Quick Start Tutorials

Tutorial A: Correcting Tuning Issues in Mixed Signals

Here's a quick run-down on how to correct tuning issues in mixed signals.

- Insert PITCHMAP into an effects slot of the audio track that needs pitch correction
- Set *Threshold* to maximum, *Feel, Purify* & *Electrify* to 50%, *Glide* to 0%, *Algorithm* to *Natural* and *Xclude Round.* to *Intelligent*.

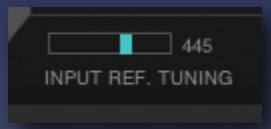
- Lower *Threshold* until the desired amount of pitch correction is achieved.

- If your signal contains drums and they're adversely affected, try raising *Threshold* a little, decreasing *Purify* slightly, or using the *Low-Cut* and *High-Cut* Sliders at the top of the Display to *Bypass* very low and very high components (which typically represent kick drums and hi-hats/ shakers)

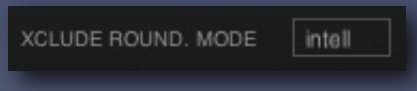
- If you feel that the results sound too much corrected, increasing the *Feel* parameter slightly can work wonders.

- Conversely, if you're not getting enough pitch correction, which may happen in rare circumstances, try reducing *Feel*, and/or checking *Strict.*

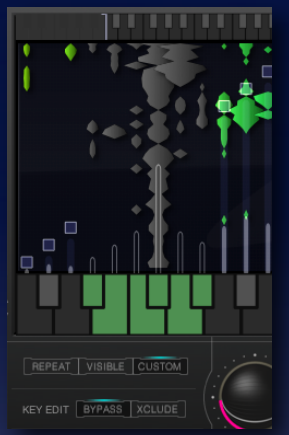
- If you are hearing a lot of "tuning artifact pitch-jumps", chances are that the signal is not tuned to A=440Hz. Try adjusting the *Input Ref. Tuning* slider to see wether this helps.



- Another possible cause for "pitch jumping" is when the detuned pitches are detuned so strongly that they are equally distant from two pitches, so when they're exactly in-between grid slots. In this case, try the different *Xclude Round.* modes to see wether one of them suits your signal better.



- If there are parts of the signal that you wish to explicitly exclude form pitch correction, such as a vocal line with lots of performance detail, you may want to *Bypass* the relevant pitches. To do this, select the *Key Edit Bypass* mode and *Bypass* all notes you wish to remain unprocessed by clicking on the respective key of the *Lower Keyboard*. Note that the *Edit* modes *Repeat/Visible/Custom* apply (see the relevant section of this manual). You will probably want to set *Edit* mode to *Custom* for most cases covered by this tutorial. When *Bypass*ing a pitch, its *Lower Keyboard* key turns green, the sounds displayed in the Display are grayed out, and the associated *Pitch Mapping Slider* is hidden.



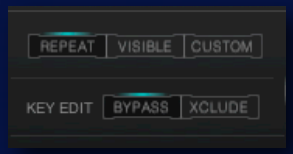
Tutorial B: Removing Wrong Notes

Here's a quick run-down on how to selectively remove individual wrong notes in an otherwise good performance.

- Insert PITCHMAP into an effects slot of the audio track that needs pitch correction
- Set *Threshold* to maximum, *Feel*, *Purify* & *Electrify* to 50%, *Glide* to 0%, *Algorithm* to *Natural* and *Xclude Round.* to *Intelligent* (for the moment).

- Drag the *Low-Cut* slider all the way to the right, and the *High-Cut* slider all the way to the left, and activate the *Mute* mode. You should now hear pretty much nothing except for parts of drums and other mainly un-pitched residuals.

- Set *Edit* mode to *Repeat* and *Key Edit* to *Bypass*



- *Bypass* all keys by clicking on 12 successive keys of the *Lower Keyboard*; they'll turn green and you'll hear your unprocessed signal.

- Switch *Edit* mode to *Custom* and mute the offending notes by removing their *Bypass* (which routes them to the *Mute Filters*, hence, they're muted).

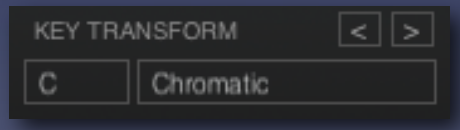
Tutorial C: Changing the Key/Scale/Melody of a Recording using the GUI Macros.

Here's a quick run-down on how to change Key/Scale/Melody of a recording using a Pitch Map created using the *Key Transform* macros of the GUI as starting point.

- Insert PITCHMAP into an effects slot of the audio track that needs pitch correction
- If you're performing these tutorials in sequence, make sure you reset the *Mute Filter*s by CTRL-clicking anywhere on the *Upper Keyboard Thumbnail* and switching *Mute* off.

- Set *Threshold* to minimum, *Feel* & *Purify* to 50%, *Glide* & *Electrify* to 0%, *Algorithm* to *Natural* and *Xclude Round.* to *Intelligent* as starting point.

- If you already have an idea what target key/scale you want, select the appropriate key and scale from the *Key Transform* pull-down menus.

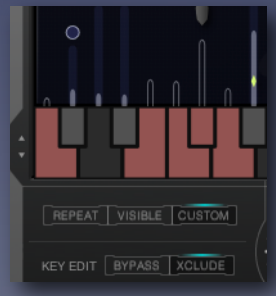


- You'll probably hear pitch going all over the place. To remedy this, read on.

- First, set *Edit* mode to *Repeat*, then shift-click on the *Pitch Mapping Slider* heads once for each note of an octave. This will set al sliders to "nearest octave" mode. Alternately, you can try shift-clicking once more for "octave down" or twice more for "octave up" modes.

- Next, move all sliders to the left or to the right using the *Voicing Arrows*. While you've set the destination pitch grid using the *Key Transform* macro, in this step you define which notes go to which grid lines. Think of this as setting the chord inversions. There'll be settings that have significantly less pitch jumps. Try changing the slider heads through their modes again, to see wether any of the settings is preferable.

- Once you have found a setting that is close to what you're looking for, you can fine-tune the pitch mapping. You can either adjust individual sliders to route the sounds they reference to different target pitches, or you can remove specific source pitches from the grid by using *Xclude*. You can *Xclude* keys by first selecting *Key Edit Xclude* mode and then clicking on the keys of the *Lower Keyboard* you wish to remove. The key will turn orange, its slider is hidden, the sound associated is grayed out in the *Display* and forced to one of the neighboring, un-*Xcluded* pitches. Which direction it is forced to depends on the *Xclude Round. Mode*. Please note that editing *Xclude* states on the *Lower Keyboard* respects the setting *Repeat/Visible/Custom*...play with this to learn how the parameters interact.



- Finally, fine-tune the pitch correction process to minimize unwanted artifacts. Raising the *Threshold* slightly may help preserving Drums and other Transient material better. Changing *Xclude Round. Mode* and adjusting *Input Ref. Pitch* can help minimize pitch jumping. Raising or lowering *Feel* can help getting coherent results, and Purify can be used to clean or dirty up the sound. Also, if there's a lot going on, you can loose some of the highest pitches by activating *Mute* and pulling down the *High-Cut* slider gradually.

Tutorial D: Changing the Key/Scale/Melody of a Recording using the GUI Sliders.

Here's a quick run-down on how to change Key/Scale/Melody of a recording manually using the *Pitch Mapping Sliders* of the GUI.

- Insert PITCHMAP into an effects slot of the audio track that needs pitch correction
- If you're performing these tutorials in sequence, make sure you reset the *Mute Filters* by CTRL-clicking anywhere on the *Upper Keyboard Thumbnail* and switching *Mute* off.

- Set *Threshold* to minimum, *Feel*, *Purify* & *Electrify* to 50%, *Glide* to 0%, *Algorithm* to *Natural* and *Rounding* to *Intelligent* as starting point.

- Drag the *Pitch Mapping Sliders* up or down. The sound associated with a slider is soloed while dragging, and the *Right Keyboards* keys light up to show you what pitch you're mapping to.

- To adjust one slider at a time, select the *Custom Edit* mode. To adjust all sliders associated to the same pitch class across all octaves, select the *Repeat* mode, to restrict that to the three visible octaves, select *Visible*.

- When in *Custom* mode, hold ALT/Option while dragging to temporarily enable *Repeat* mode.
- To increase or decrease all slider values by one semitone at a time, click on the *Up or Down Transpose Arrow*, respectively. They're located to the left of the *Lower Keyboard*.

- To transpose a pitch to a different octave than the one visualized by the *Right Keyboard*, drag the slider to the desired target pitch class, then shift-click its head repeatedly to switch transposition modes, where *Square* means "WYSIWIG", *Round* means "Use the octave closest", *Downward triangle* means "Down one octave" and *Upward triangle* means "Up one octave".

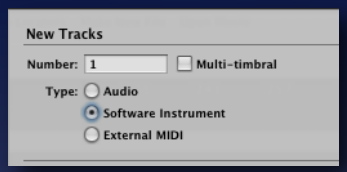
- Slowly raise *Threshold* to the point where some notes become unprocessed, then back it down a little. This way, you're excluding as much transient detail from the processing as possible, to retain crispness.Adjust *Feel* to get the desired balance between tuning precision and realistic results.

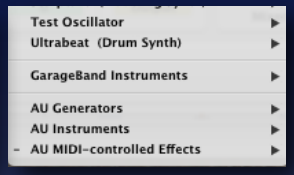
Tutorial E: Changing the Key/Scale/Melody of a Recording using MIDI

Here's a quick run-down on how to change Key/Scale/Melody of a recording using *Live MIDI* input.

For Apple Logic Pro 9.x:

- Insert PITCHMAP into a software instrument tracks instrument slot. You'll find the plug-in in the category "AU MIDI-controlled Effects".





- Place the audio file to be processed on an audio track, and set the tracks output to "No Output".

- Choose the track that's playing back the audio as the side-chain source from within the PITCHMAP GUI.

- Activate *MIDI MAP* in the PITCHMAP GUI, and set *Key Edit* to *Xclude*. Also, *Reset* the sliders.

- Select the Instrument track in the Arrangement view, the red "R" button on the track header should be lit up.

- Start the playback, and play some MIDI notes. The results are influenced by *Edit Repeat/Visible/Custom*, the state of the sliders and the *Xclude Round. Mode* (see the relevant section of this manual).

For Ableton Live Pro 8.x:

- You'll need one audio track, one MIDI track and one Return bus
- Insert PITCHMAP into the Return bus.
- Place the audio to be processed on the audio track, set is output to "Sends Only", and set the send feeding the bus that PITCHMAP resides on to unity gain.

- On the MIDI track, select your MIDI ins and set the "MIDI To" parameter to send to PITCHMAP. Set "Monitor" to "In".

- Activate MIDI MAP in the PITCHMAP GUI, and set Key Edit to Xclude. Also, *Reset* the sliders.

- Start the playback, and play some MIDI notes. The results are influenced by *Edit Repeat/Visible/Custom*, the state of the sliders and the *Xclude Round. Mode* (see the relevant section of this manual).

Parameters And Functions

The GUI, Its Parameters And What They Do

GUI Overview

Global Controls

Bypass

Bypasses any and all processing. The difference to the host's bypass functionality is that when bypassing PITCHMAP internally, the *Display* remains active.

Input Ref. Tuning

This slider allows adjusting the input/source reference tuning, e.g. what the algorithm sees as being "in tune". This value is in Hertz, representing the absolute frequency of what is considered as an A4 (typically 440.00 Hertz). If your input signal is not tuned to 440Hz, you may see many "tuning jumps". Adjusting this slider may reduce that.

Output Tuning

Adjusts the output tuning. This is effectively a very high-quality pitch-shifter. Use this if you want to have your results fit another recording that is not tuned to A=440Hz.

Snapshots

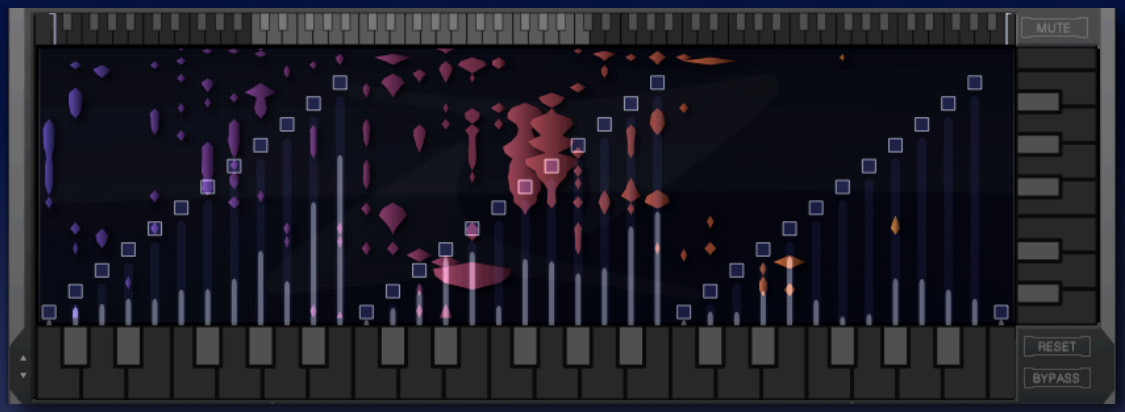
The *Snapshots* allow saving different plug-in settings *within* one plug-in preset. One example for why this is useful would be when, for example, the verse and the chorus of a song to be processed require different settings because they are in different keys or very differently orchestrated. Using the *Snapshot* functionality, you can create one setting per song part and call these sample-accurately using host automation. Automation would otherwise be very time-consuming to say the least, and especially automating *Pitch Mapping* would be a real challenge. *Snapshots* store the state of the following parameters:

- the values and *Mapping Modes* of the *Pitch Mapping Sliders*
- *Bypass*- and *Exclude*-States for all pitches
- *Low-Cut* and *High-Cut* boundaries as well as the state of the *Mute* switch
- *Threshold*, *Feel*, *Purify*, *Glide* and *Electrify* values
- *Input Ref. Tuning* and *Output Tuning*
- *Rounding* mode
- *Natural* and *Strict* modes

As you can see, this does not include any MIDI or editing parameters, as *Snapshots* are meant to adapt settings relevant to the same signal to be corrected, **not** to replace plug-in presets! Think "one plug-in preset per signal to be processed, one *Snapshot* per section of that that requires individual settings".

Snapshots are saved by alt-clicking on the slot you wish to save to and recalled by a click on the *Snapshot* slot to be recalled. Alternately, you can first click on the *Save* button, then on the *Snapshot* slot you wish to save to. To cancel, click *Save* again (and don't click on a *Snapshot* button *grin*). Both methods overwrite the targeted *Snapshot* slot without further warning, so be careful!

Graphical Editor Area



The Display

The *Display* is your central source of information about your signal in PITCHMAP. Understanding it and the functionality it provides is essential to getting the most out of PITCHMAP. Basically, it displays 3 octaves of your input signal in a fashion similar to a spectrogram, flowing from bottom to top, with lower frequencies to the left and higher frequencies to the right. However, it is not a simple spectrogram that maps frequency content and amplitude to horizontal position and color, it is significantly more advanced than that. What we display are detected sounds, including their harmonics, transients and noise components, whose fundamental pitch we map horizontally. Absolute pitch is coded into the color, and amplitude is displayed using the width of the symbols. The Lower Keyboard at the bottom of the Display also indicates their pitch, serving as legend or grid. In a way the *Display* is rather similar to a piano roll.
The *Display* also serves as background for the *Pitch Mapping Sliders*, helping you find the pitches you want to process.

The Upper Keyboard Thumbnail

The *Upper Keyboard Thumbnail* is used as reference grid for the *Low-Cut* and *High-Cut* sliders, and for navigating the *Display*. The lighter grey 3-octave area corresponds to the visible 3 *Display* & *Lower Keyboard* octaves. Drag the grey area or click anywhere in the upper keyboard to scroll the *Display* and the *Lower Keyboard*.

Mute Filters: Low-Cut And High-Cut Sliders

Sounds outside the bounds defined by these sliders are either bypassed or muted, depending on the state of the *Mute* switch. Drag these to adjust the cut-off point. CTRL-Click anywhere on the *Keyboard Thumbnail* to reset these. When the *Low-Cut* slider is dragged to the right past the *High-Cut* slider, the range between the sliders is bypassed/muted, not the range outside of the sliders. Please note: THESE ARE NOT FILTERS! When in *Mute* mode, any sound that has it's base pitch in the are that is *Mute*d will be removed, including its harmonics, transients and noise components. Think in terms of muting channels on a mixing desk.

Mute Switch

This control defines wether the material outside of the boundaries defined by the *Low-Cut and High-Cut* parameters is *Bypassed or Muted*.

Lower Keyboard

The *Lower Keyboard* has multiple functions. Firstly, it serves as a reference grid for the sounds shown in the *Display*. Secondly, it serves as source pitch grid for the *Pitch Mapping Sliders*. Thirdly, it is used to edit the *Bypass* and *Xclude* states per source pitch. Think of the keys of the *Lower Keyboard* like mixer channels (with every pitch that is contained in your recording having its own mixer channel) and you'll get the hang pretty fast. Also displays which MIDI note is being pressed when in *MIDI MAP* mode.

A click on a key toggles the *Bypass*/*Xclude* state for that pitch, depending on whether *Bypass* or *Xclude* is selected in the *Key Edit* parameter. A *Bypass*ed key will show green, an *Xcluded* key orange.

Also, *Repeat*/*Visible*/*Custom* is respected. So, for example, if *Repeat* is on, a click on a key will toggle the state for that key in all octaves. CTRL-Clicking anywhere on the *Lower Keyboard* resets all states. When in *MIDI MAP* mode, the *Lower Keyboard* serves display purposes only, and keys pressed via MIDI will be shown in blue.

Reset

Resets all *Pitch Mapping Sliders* to default values. Use this to start from scratch. Alternately, you can CTRL-click anywhere in the *Display* to reset the sliders.

Right Keyboard

The *Right Keyboard* represents the destination (output) pitches and serves as a grid for the *Pitch Mapping Sliders*. The keys light up when adjusting a slider to show its value.

Pitch Mapping Sliders

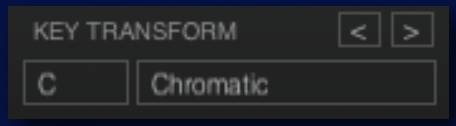
These are the main GUI controls for mapping pitch. By dragging these up or down, you are mapping a source pitch (as shown by the *Lower Keyboard*) to a destination pitch (as shown by the *Right Keyboard*). Think of this like a routing matrix or patchbay, "this goes there". Or you can think of a slider as a transpose/pitch-shift value that is available per source pitch. While dragging a slider, the relevant pitch is soloed. Holding alt/option while dragging drags along the sliders of the same pitch class across all octaves (so dragging the slider of a C drags the sliders every C). The body of the slider shows a level meter for the pitch that is referenced. The head of the slider adjusts the mapping behavior, and can be switched through 4 states by shift-clicking it.

Square Slider Head
Pitch is mapped within the octave of the source pitch only, exactly defined by setting a slider. WYSIWYG.

Round Slider Head
Mapping is automatically performed towards the nearest octave. For example: when you're mapping a C to an E, the E in the same octave as your source pitch will be used (it has a distance of +4 semitones to the C). If you mapped the C to an A (+9 semitones), the lower octave will be used (-3 semitones). The purpose of this mode is to keep transposition as low as possible to maximize sound quality, and it is actually quite similar to the way musicians voice their chords.

Downward Triangle Slider Head
Mapping always uses the octave below, effectively transposing your slider down by an octave. The purpose of this mode is to allow transpositions outside of the range visualized by the *Right Keyboard*, while keeping it easy to read the map.

Upward Triangle Slider Head
Performs the same thing as the Downward Triangle Slider Head, but transposes **up** by an octave instead of **down**.



Key Transform

Key Transform is a macro function that can be used to quickly create a Pitch Map based on a destination key/scale by setting all *Pitch Mapping Sliders* to specific values. *Key Transform* consists of two pull-down menus for selecting destination key and destination scale. The macro is applied on releasing either of the pull-down menus.

Graphical Editor Settings Area

Key Edit Modes

The active *Key Edit* mode selects whether clicking on a key on the *Lower Keyboard* edits the *Bypass* or *Xclude* state of the corresponding pitch. When in *MIDI MAP* mode, selects wether MIDI notes are used to map the pitches (*Xclude*) or to un-mute a pitch (*Bypass*)

Edit Mode

The active *Edit* mode defines behavior when editing *Mapping Sliders*, *Bypass*/*Xclude* states via the *Lower Keyboard* and when using *MIDI MAP*.

Edit Mode: Repeat

When *Edit* mode is set to *Repeat*, any value edited is copied to all octaves. Example: when dragging a *Mapping Slider* associated with a "C", the same value is applied to every "C" in all octaves. Useful for quickly mapping one pitch class to another across the entire spectrum. When using *MIDI MAP*, playing a chord results in the entire range being mapped to that harmony, giving results instantly.

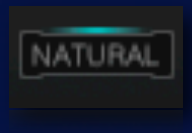
Edit Mode: Visible

Edit mode *Visible* works like *Repeat*, but restricts the range to the visible three octaves. Example: setting *Bypass* enabled using the *Lower Keyboard* for an "A" causes all "A" keys in the visible three octave range to be set to the same value. *Visible* mode helps tailor independent intra-scale voicings for different frequency ranges (basically for bass, harmonies and melodies). In *MIDI MAP* mode, the range outside of the visible area is divided into two separate *Repeat* zones.

Edit Mode: Custom

In the *Custom* setting, only the exact key/slider/note that you edit is changed, leaving all other values alone. In *MIDI MAP* mode, this allows playing completely independent phrases in varying parts of the MIDI keyboard. This even allows mapping all source pitches to a single destination pitch (which can sound very cool)!

Process Options Area

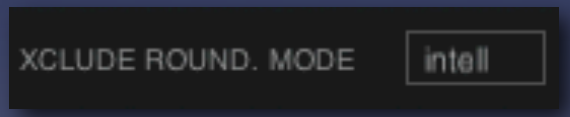


Natural

When this parameter is active, the analysis engine will use a perceptive model to discern voice components in the input signal, and process these independently of other sounds. This can prevent a certain type of coloration when processing signals that are musically rather "busy" and contain voice. If you notice unexpected coloration of voice components when working on material that has vocals, try activating this.

Strict

This switch toggles between normal and *Strict* pitch correction modes. *Strict* removes more pitch variation, but may reduce transient crispness.



Xclude Round. Mode

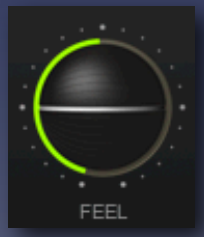
Selects the rounding mode used in pitch detection. This influences the way that pitches that lie between allowed destination pitches are handled, e.g. in which direction they are moved under which circumstances. Available options are *Up*, *Down*, *Nearest* and *Intelligent*. *Intelligent* tries to avoid jumping as much as possible, *Nearest* creates typical (and quite popular) tuning-effects.

Process Parameter Area

The Process: How We Do The Magic

MAP: Mixed-Signal Audio Processing
PITCHMAP is based on our proprietary MAP technology, which in turn is based on a model of the human auditory system. PITCHMAP "hears" your signal, and discerns the contained sounds much like a human would. It then de-mixes your signal, and applies processing to each sound component separately. Technically, this is realized using techniques like pattern recognition based on artificial neural networks and adaptive transformation processes that take a perceptive model into account. Sounds like rocket science? It is.These techniques are widely used in artificial intelligence applications.

Threshold
Sets how detuned a sound must be to be processed. At minimum *Threshold*, everything is processed. With higher values, notes that are already somewhat accurately tuned will be *Bypass*ed. For creative applications set this low, for fixing tuning issues in sensitive material set this high.



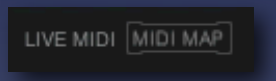
Feel
Allows re-introducing micro-variations in pitch, such as vibrato or slides, after correction is applied. Set low for very tight or synthetic results as popular in many recent genres, medium for tightened and natural results, and high to preserve all intonation detail (while still having any pitch mapping applied).

Purify
Purify adjusts the amount of noise components. Values higher than the default 50% reduce noise components and introduce an effect reminiscent of resonance, values below 50% increase the the level of noisy components. Can be used to deliberately create a surreal sound or to bring focus to transients and other non-harmonic aspects of the signal.

Glide
Glide adjusts the length of polyphonic glide/portamento to be applied. Whenever a new sound starts, the pitch ramps up/down from the source pitch to the destination pitch over an amount of time set with this slider. Subsequent sounds on the same pitch do not trigger the *Glide* again, unless interrupted by a non-pitched transient. Pretty cool.

Electrify
Electrify can be used both to introduce a very unique, electric synthetic coloration and to optimize the process to your signal. The default value is 50%, which is neutral. High values make results sound electric, low values can actually improve processing quality but may introduce unexpected harmonics when working with sparse recordings. Values around 60-75% can work well to improve results when working with mixed vocal stems. High values work best in combination with a low value for *Feel*. Note that setting *Electrify* to very low values increases the number of sounds detected and will thus use more CPU for the *Display*.

MIDI



Live MIDI: MIDI MAP
MIDI MAP is a unique PITCHMAP feature that allows forcing melodies or harmonies you play via MIDI onto the signal being processed. It's like you were playing the instruments contained in the signal via MIDI, all at the same time. MIDI MAP also allows intuitive de-mixing by allowing only sounds to pass through that correspond to the MIDI notes you are playing. When *MIDI MAP* is active, the *Lower Keyboard*, including all associated *Bypass* and *Xclude* states, is ignored. Instead, live MIDI input is used to set values. Depending on the state of the *Key Edit* parameter, MIDI notes either define the destination pitches (*Xclude*) or are used to un-mute a key (*Bypass*). MIDI MAP respects the *Edit* modes *Repeat*/*Visible*/*Custom* setting.

See the quick-start Tutorials on how to set up MIDI with PITCHMAP.

Performance Optimization

Sound Optimization

Here are a couple of tips on how to fine-tune the PITCHMAP parameters for best results.

- Increasing the *Threshold* parameter can help preserving drum transients
- Also, decreasing *Purify* below the default 50% can improve transient preservation
- If you're seeing a lot of "pitch jumping", try adjusting the *Input Ref. Tuning* and the *Xclude Round. Mode*
- *Bypass*ing very low and very high frequencies can help preserve bottom end impact and transient crispness; adjust the *Low-Cut* and *High-Cut* sliders so that any components you do not wish to tune/map are *Bypass*ed. Please note: when *MUTE* is on, this will completely remove those components instead of *Bypass*ing them!
- When working with signals that contain vocals, or if harmonics of certain sounds are being missed, try activating *Natural*
- If you are working on signals that are not very dense, such as single polyphonic instruments or vocal stems, you may hear some unexpected, higher-pitched "ghost copies" of the signal. Increasing *Electrify* slightly to around 60-70% will often reduce or completely remove this.
- In general, sound quality is proportional to pitch-shift factor, so you should always try to achieve desired harmony/melody changes with as little pitch-shift as possible. When using *MIDI MAP* mode, the easiest way to make sure you get the minimum shift possible is to *Reset* the GUI sliders before activating *MIDI MAP* and to use the *Repeat* mode. When using the *Pitch Mapping Sliders*, you can set their heads to *Round* by shift-clicking them, which sets them to a mode that automatically uses the shortest shift distance. Also, once you've set up a target key/scale using the sliders or the *Transform* macro, use the *Voicing Arrows* to define which source pitches get mapped to which interval in the target scale --- some voicings will use vastly less pitch shift and may sound just as good (or better)
- When working with very dense material, or material with very noisy or broadband sounds like heavily distorted guitar chords or aggressive synth-sounds, PITCHMAP may sometimes fail to recognize all harmonics and may move some of them to a residual layer (which typically holds drum transients and the like). In this case, you may hear some traces of the original pitch or inharmonic coloration. Raising *Purify* can reduce this effect.
- Raising *Purify* significantly will however make your sound resonant/synthetic. This can be counter-balanced to some degree by raising *Feel* or by adding small amounts of *Glide*.
- On some sources, like heavily detuned finger-picked acoustic guitars, pitch correction may sometimes not fully remove tuning inaccuracies even with *Threshold* and *Feel* at their minimum values. This is mainly due to a) beat frequencies in the chord and their harmonics being detected as separate pitches and being corrected differently than the rest of the sound and b) the very short pitch "bend" that the picking itself introduces by manipulating string tension. Try using *Strict* mode, which will remove more tuning inaccuracies while sacrificing some

transient detail. This can be counter-acted to some degree by setting *Purify* below 50%. As an alternative, if this approach doesn't work well, try raising *Purify* above 50% (without using *Strict* mode). Yet another approach is to first *Xclude* all pitches that aren't supposed to be there in the first place, then slowly increase *Electrify* (a value around 70% is usually good for acoustic guitars) and adjusting *Purify* and setting *Strict* to taste. Taking *Electrify* too high will give very synthetic sounding results, but if you get the balance just right, the effect should be unnoticeable in context of a mix.

CPU Performance

If you're getting a high CPU load using PITCHMAP, you can try the following to improve CPU performance.

- Try increasing buffer sizes in your host software to their largest values, then gradually reduce them until you find a suitable balance between latency and CPU hit
- Try closing the GUI of any plug-in that you don't currently need to have visual feedback on.
- Quit any open applications that are not needed.
- In Logic Pro, all processes that are fed by a live source are processed on on CPU core. When using PITCHMAP under MIDI control, this means that all down-stream plug-ins are run on the same core as PITCHMAP whenever its software instrument track is selected and the record enable switch is lit. Selecting a different track in the arrange, or un-setting the record enable button allows CPU load to be spread out across all available cores, so this may help reduce CPU load.
- Setting *Electrify* very low causes a higher CPU load due to more sounds being recognized, which causes the Display to render more symbols. Keep the value of *Electrify* around 50% if you don't explicitly use it for fine-tuning your sound.

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