Lounge Lizard session

USER MANUAL

AAS

Applied Acoustics Systems

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Contents

1 Introduction

The *Lounge Lizard Session* is a software electric piano reproducing on the classic instruments of the seventies. It is based on the synthesis engine of the AAS Lounge Lizard EP-4 electric piano.

Each component of an electric piano has been modeled with AAS cutting edge physical modeling technology to provide realistic and lively sounds. Physical modeling uses the laws of physics to reproduce the behavior of an object. In other words, the *Lounge Lizard Session* solves, in real time, mathematical equations describing how its different components function. No sampling or wavetables are used in the *Lounge Lizard Session*, the sound is simply calculated in real time by the CPU according to the values each parameter is receiving. The *Lounge Lizard Session* is more than a simple recreation of vintage instruments, its parameters can be tweaked to values not possible with the real instruments to get some truly amazing new sounds that still retain a warm acoustic quality.

Before discussing the synthesizer in more detail, we would like to take this opportunity to thank you for choosing an AAS product. We sincerely hope that this product will bring you inspiration, pleasure and fulfill your creative needs.

1.1 System Requirements

The following minimum computer configuration is necessary to run *Lounge Lizard Session*:

Mac OS

- Mac OS X 10.11 (El Capitan) or later
- Intel Core i5 (circa 2012), Apple M1 processor or later
- 64-bit DAW

Windows

- Windows 10 64-bit or later
- Intel Core i5 (circa 2015) or later
- 64-bit DAW

Keep in mind that the computational power required by *Lounge Lizard Session* depends on the number of voices of polyphony and the sampling rate used. These computer configurations will enable you to play the factory sounds with a reasonable number of voices but performances will vary depending on your specific computer configuration.

1.2 Installation and Authorization

Installation and authorization of *Lounge Lizard Session* is quick and easy. For the installation of our different products we use so-called *custom installers* which include both the program itself and your licence information. Installation and authorization can therefore be carried out automatically in a single step and from a single file when your computer is online. AAS products use a a copy protection system based on a a proprietary challenge/response key exchange and therefore their authorization does not rely on other third party software and/or hardware.

In order to start the installation process, simply double-click on the installer file that you have downloaded. This will first install the program and then use the licence information included in the custom installer file to to carry out automatically the challenge/response procedure.

Once the installation is completed, you can check your licence information by starting the program and clicking on the chevron icon at the top of the interface. This will open a dialog box in which you should see your serial number and the email address which you used in order to get the installer file. Note that your serial number is also sent to you by email when your custom installer is created.

If your computer is offline when running the installer, or if the authorization procedure could not be completed for another reason, the dialog box will will not show your serial number and you will be prompted to authorize the program. In that case, click on the *Authorize* button and follow the on-screen instructions. Note that it is possible to use the program during 15 days before completing the authorization process. After that period, the program will not function unless it is authorized.

1.3 Getting Started

1.3.1 Using *Lounge Lizard Session* in Standalone Mode

Lounge Lizard Session comes with a standalone versions allowing you to play it without having to open your sequencer. This can be convenient to explore *Lounge Lizard Session* and its library, play it live or do some sound design work. To start *Lounge Lizard Session* in standalone mode, simply follow the instructions below:

- **Windows** - Double-click on the *Lounge Lizard Session* icon located on your desktop or select *Lounge Lizard Session* from the **Start** > **All Programs** > menu.
- **Mac OS** - Double-click on the *Lounge Lizard Session* icon located in the Applications folder.

Before you start exploring the program, take a moment to set up you audio and MIDI configuration as explained below.

Audio and MIDI Configuration

Audio and MIDI configuration tools are available by clicking on the **Audio Setup** button located in the lower left corner of the *Lounge Lizard Session* interface. The **Audio Setup** dialog first allows you to select an audio output device from those available on your computer. Multi-channel interfaces will have their outputs listed as stereo pairs.

On Windows, the audio output list is organized by driver type. The device type is first selected from the *Audio Device Type* drop-down list. If you have ASIO drivers available, these should be selected for optimum performance. The **Configure Audio Device button** allows you to open the manufacturer's setup program for your audio interface when available.

Once the audio input has been selected, you can then select a sampling rate and a buffer size from those offered by your audio interface.

The list of available MIDI inputs appears at the bottom of the dialog. Click on the checkbox corresponding to any of the inputs you wish to use.

1.3.2 Exploring the Factory Sounds

Lounge Lizard Session comes with a wide range of factory programs right out of the box which amounts to a huge range of sounds before you have even turned a single knob. As you would expect, the best way of coming to grips with the possibilities *Lounge Lizard Session* offers is simply to go through the programs one at a time.

Lounge Lizard Session uses the notions of *Banks* and *Programs* to organize and classify sounds. A program or preset is a stored set of parameters corresponding to a given sound. The programs are grouped and organized in banks.

The name of the currently loaded bank and program are displayed at the top of the interface. One navigates among the different banks and programs by using the arrows in each of the corresponding boxes or by opening the associated drop-down menu by clicking inside these boxes. Banks and programs are managed using the *Bank Manager* which is revealed by clicking on the *Manage* button appearing above the right-top corner of the *Bank* box. Playing programs and organizing them is pretty straightforward, please refer to Chapter 4 for a complete description of the bank and program management operations.

1.3.3 Using *Lounge Lizard Session* as a Plug-in

Lounge Lizard Session integrates seamlessly into the industry's most popular multi-track recording and sequencing environments as a virtual instrument plug-in. *Lounge Lizard Session* works as any other plug-in in these environments so we recommend that you refer to your sequencer documentation in case you have problems running *Lounge Lizard Session* as a plug-in. Note that in plug-in mode the audio and MIDI inputs, sampling rate, and buffer size are determined by the host sequencer.

1.4 Getting Help

AAS technical support representatives are on hand from Monday to Friday, 9am to 6pm EST. Whether you have a question on *Lounge Lizard Session*, or need a hand getting it up and running as a plug-in in your favorite sequencer, we are here to help. Contact us by phone or email at:

- North America Toll Free: 1-888-441-8277
- Worldwide: 1-514-871-8100
- Email: support@applied-acoustics.com

Our online support pages contain downloads of the most recent product updates, and answers to frequently asked questions on all AAS products. The support pages are located at:

1.5 About this Manual

Throughout this manual, the following conventions are used:

- Bold characters are used to name modules, commands and menu names.
- Italic characters are used to name controls on the interface.
- Windows and Mac OS keyboard shortcuts are written as Windows shortcut/Mac OS shortcut.

2 The Electric Piano

2.1 General Functioning

The mechanism of an electric piano is relatively simple and is illustrated in Figure 1. A note played on the keyboard releases a damper and activates a felt-tipped hammer which hits a metal bar having the shape of a tuning fork. The struck portion of the fork is called the tine and is made of stiff steel wire. The other part of the fork, parallel to the tine, is called the tonebar. It acts as a resonator adding sustain to the sound. The vibrations of the tine bar are picked up by an electromagnetic pickup and sent to an amplifier, very much like in an electric guitar. The result is a very expressive instrument with a characteristic smooth tone which can also be made to growl or bark when played harder and the pickups introduce nonlinear distortion.

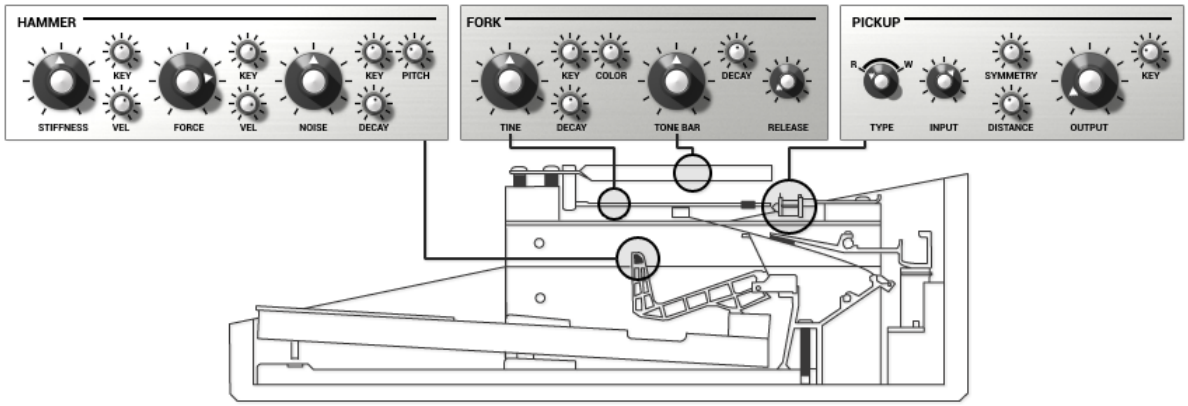


Figure 1: Geometry of an electric piano and corresponding elements on the *Lounge Lizard EP* interface.

The functionning of a reed electric piano is very similar except that instead of a fork, the hammer hits a metal reed as shown in Figure 2. The reeds are placed near metal plates which together with the metal reeds form an electrostatic or capacitive pickup system. Compared to electric pianos based on metal fork, these instruments are known to have a brighter and more hollow sound.

2.2 Tuning an Electric Piano

Electric pianos provided adjustment for pitch, timbre, and volume. On the original pianos, the tine is fitted with a spring which can be moved along its length for fine-tuning. The tone and volume can also be adjusted by changing the position of the tine in relation to the pickups. Tuning a reed piano is even more delicate. On the tip of each reed is a lump of solder whose size and shape alter both the pitch and the tone of the note. These adjustments were at the heart of the electric piano character as they control the harmonic content, attack, and decay of the sound, offering unique

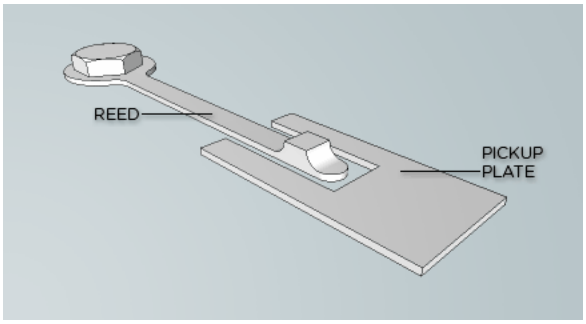


Figure 2: Reed and electrostatic pickup.

tone to each player. But there was a price for this flexibility, several painstaking hours with a screwdriver or soldering iron and incredible patience was needed to change the sound of an electric piano. Suffer no more with Lounge Lizard, the preset library provides a selection of thoroughly chosen configurations reproducing popular models so that you do not have to touch one knob before starting to play. The flexibility of the engine gives you access to all the physical parameters of the instrument allowing you to fine-tune every preset to your playing style.

3 General organization of *Lounge Lizard Session*

Lounge Lizard Session is an electric piano solution including complete modeling of the different electro-mechanical elements of a piano, a library of sounds, a compressor, an equalizer and effects module. The graphical interface of *Lounge Lizard Session* is shown in Figures 3.

The lower section of this view is where the main piano parameters are displayed. On the left of these parameters, one finds a pitch bend wheel and a modulation wheel controlling the *depth* of the **Tremolo** module. Just below is a clickable eight octave ribbon allowing one to play different notes on the range of the piano which can be useful when no MIDI keyboard is connected to the computer.

The middle section of this view allows one to turn the different effects *on* and *off* and to rapidly adjust their main parameters.

The top version of the interface includes the preset bank manager, audio and MIDI monitoring as well as a master volume control.

Figure 3: The Play view.

The size of the graphical interface can be adjusted by click-dragging the handle in its lower right corner. While resizing the interface the zoom factor is displayed in the upper left corner of the interface. This zoom factor can always be displayed by positioning the mouse on this corner. When clicking on the zoom factor, a drop-down menu with specific size ratios is displayed. Selecting a value resizes the interface automatically to that ratio. Note that this resize feature is only available for 64-bit versions of the program.

4 Bank and Program Management

Lounge Lizard Session comes with several factory presets, called *programs*, covering a wide range of sounds. This collection of programs lets you play and familiarize yourself with this synthesizer without having to tweak a single knob. Soon, however, you will be experimenting and creating your own sounds and projects that you will need to archive or exchange with other users. In this section, we review the management of programs.

4.1 Banks and Programs

Sounds are stored in banks contaning so-called *programs*. The name of the currently selected bank is shown in the *Bank* drop-down display located at the top of the *Lounge Lizard Session* interface. The list of available banks is viewed by clicking on the *Bank* display. A bank can be selected by navigating in the list of banks using the left and right-pointing arrows in the display or by clicking on its name when the list of banks is open.

The list of programs included in the currently selected bank can be viewed by clicking on the *Program* display located below the *Bank* display. A program is selected by using the left and right-pointing arrows or by clicking directly on its name. Once a program is selected, the value of the different parameters of the synthesizer are updated and it can then be played.

4.2 Saving Programs

Programs are saved by clicking on the **Save** button located on the top of the *Program* display. When a program has just been loaded, this command is greyed and therefore inactive. It is activated as soon as a parameter of the interface is modified. Clicking on this command replaces the stored version of the program with the new one.

The **Save As** command is activated by clicking on the corresponding button which opens the **Save Program** pop-up window. It is then possible to save the program under a new name or its current one in any of the available program banks. Note that if the original name of the program is used, a new program with the same name will be created at the end of the program list meaning that the original program is not erased. This also implies that it is possible to have many programs with the same name in the same bank.

4.3 The Bank Manager

Banks and Programs can be edited using the **Bank Manager**. The manager window is displayed by clicking on the *Manager* button located above the *Bank* display. It is closed by clicking again on the same button. On the left of the window, one finds the list of banks. Clicking on a bank name fills the list of programs located in the center of the window with the name of these included in the selected bank.

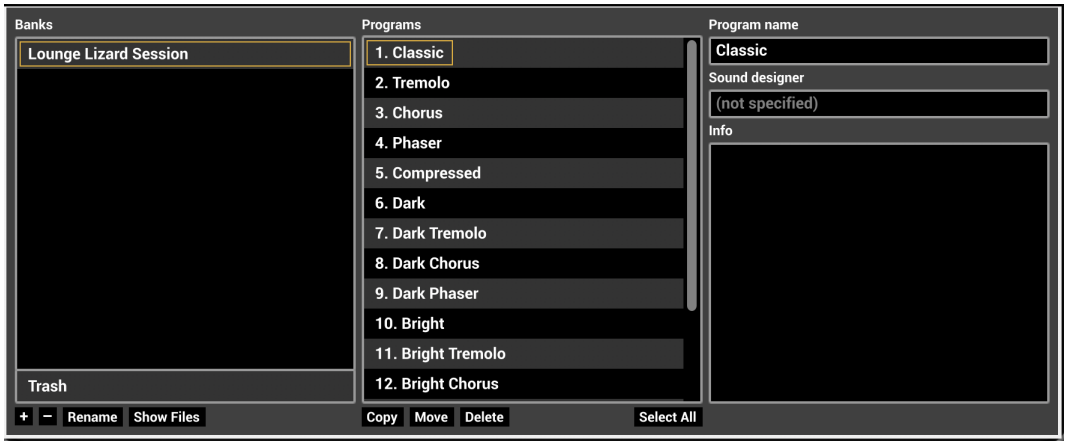


Figure 4: Bank and program manager window.

A new bank can be created by clicking on the + button below the bank list. This opens the **Create New Bank** window in which the name of the new bank can be entered. A bank can be deleted by first selecting it in the bank list and then clicking on the - button. Be careful, this command erases a bank and all the programs it contains; this operation is permanent and can not be undone. In order to rename a bank, simply click on the *Rename* button and enter a new name.

Banks and the information corresponding to each of its programs is stored in a simple text file on your computer hard disk. In order to view these bank files, click on the *Show Files* button under the bank list. On Windows, this command will open an Explorer window at the location where the files are stored. On Mac OSX, the command has a similar effect and opens a Finder window. All the bank file names follow the same format and begin with the bank name. These files can be used for backups or to exchange presets with other users.

The list of programs included in the selected bank is displayed in the program list in the center of the manager window. Presets are selected by clicking on their name which updates the program information appearing on the right of the preset list. Program information includes the name of the preset, its author and comments. This information can be updated by clicking on the corresponding box which opens an edition window. Note that multiple presets can be updated simultaneously by selecting more than one preset at once and clicking on a preset information box.

A multiple selection consisting of adjacent programs is obtained by holding down the *Shift* key on the computer keyboard and then clicking on the name of the first program to be copied and then the last one. A non-adjacent multiple selection is obtained by holding down the *Ctrl/command* computer key and clicking on the name of the different programs to be copied. It is also possible to select all programs at once by clicking on the *Select All* button at the bottom of the program list.

Programs can be copied to another bank by clicking on the *Copy* button. A program must first be selected by clicking on its name on the program list; it is then copied by moving the mouse to a given bank in the *Bank* list on the right and clicking on the bank name. The **Move** command is activated by clicking on the *Move* button; it copies a preset to a new bank but also erases it in the

original bank. A multiple selection of programs can be used with the **Copy** and **Move** commands

Programs can be deleted from a bank by first selecting them and then clicking on the *Delete* button. This will move the programs to a special bank called *Trash* which is located below the regular list of banks. This means that deleted programs can always be recuperated as long as they are not deleted from the *Trash* bank. The content of the *Trash* bank is viewed by clicking on its name; the different programs can then be moved to the other banks as explained above. The *Trash* bank can be emptied by clicking on the *Empty Trash* button which appears below the program list when the *Trash* bank is selected. Be careful as this command can not be undone.

4.4 Using MIDI Bank and Program Changes

Banks and programs can be changed using MIDI bank and program change commands. For more information on how to use these commands, please refer to sections 7.2.4 and 7.2.5.

4.5 Backups of Banks and Programs

User banks are stored on disk as simple text files located in the following folders:

On **Mac OS**: /Users/[user name]/Library/Application Support/Applied Acoustics Systems/Lounge Lizard/Banks

On **Windows**: %AppData%\Applied Acoustics Systems\Lounge Lizard\Banks

The bank files saved by *Lounge Lizard Session* are named using the following convention:

[name of bank].Lounge Lizard Bank

These file contain all the information corresponding to the programs they include. These files can be displayed directly from *Lounge Lizard Session* by opening the *Bank* manager and clicking on the *Show Files* button. This will open an Explorer or Finder window on Windows or Mac OS respectively at the right location.

The simplest way to create a backup of banks and programs is to make a copy on an external media of the above mentioned folders. Individual banks can be backed-up by making copies of individual bank files.

4.6 Exchanging Banks and Programs

Banks and programs can easily be shared with other *Lounge Lizard Session* users. This operation simply involves the exchange of the above mentioned user bank files. When a new bank file is copied to the bank folder, it is automatically available to *Lounge Lizard Session*.

Note that individual programs can not be exported. They always appear inside a bank file. If you only wish to share a few programs, create a new bank, copy the programs you wish to exchange to this bank and share the corresponding bank file.

4.7 Restoring the Factory Library

If necessary, it is possible to restore the original factory library of banks and programs. The original factory bank files are located in the following folders:

On Windows 64-bit:
C:\Program Files (x86)\Applied Acoustics Systems\Lounge Lizard\Factory Library

On Windows 32-bit:
C:\Program Files\Applied Acoustics Systems\Lounge Lizard\Factory Library

On Mac OS startup disk:
/Library/Application Support/Applied Acoustics Systems/Lounge Lizard/Factory Library

Restoring the factory library simply involves copying the files contained in these folders and pasting them in the user bank folders listed in Section 4.5. The user bank folders can be opened directly in an Explorer or Finder window, on Windows and Mac OS respectively, or by using the *Show Files* command directly from the *Lounge Lizard Session* bank manager.

Note that if you have bank files with the original factory bank names in your user bank folder, they will be replaced by the original factory files. This means that you will loose programs that you would have modified or created in these banks. This operation must therefore be done with caution and it is recommended that you make copies or rename your user banks before proceeding with the restore.

5 Parameters

This section can be used as a reference on the different controls appearing on the *Lounge Lizard Session* graphical interface. We begin by describing the behavior of the different types of controls appearing on the interface and then describe the parameters of each module of the synthesizer.

5.1 General Functioning of the Interface

5.1.1 Knobs

The synthesizer parameters are adjusted using controls such as knobs, switches and numerical displays. A specific control is selected by clicking on it. A coarse adjustment is obtained by click-holding the parameter and moving the mouse (or the finger on a track pad) either upwards and downwards or leftwards and rightwards. The value of the parameter replaces its label while it is being adjusted.

Fine adjustment of a control is obtained by holding down a modifier key of the computer keyboard (Shift, Ctrl, Command or Alt key) while adjusting the parameter. Precise values can also be entered manually by clicking on the parameter label and typing the value on the computer keyboard.

Double clicking on a knob brings it back to its default value when available.

5.1.2 Switches

Switches are turned *on* or *off* by clicking on them. They are used to activate or deactivate modules and the *sync* feature of some parameters.

5.1.3 Drop-down Menus

Clicking on a display with a small down-pointing triangle reveals a drop-down menu with a set of possible settings for the control. Adjustment of the control is obtained by clicking on a selection.

5.2 The Parameters

We focus in this chapter on the middle and bottom part of the *Lounge Lizard Session* interface. The top part of the interface includes the bank manager described in Chapter 3 as well as audio and MIDI monitoring functions that will be described in Chapter 7. The middle part of the interface includes the **EQ**, **Compressor Reverb**, **Phaser**, and **Chorus** modules while the lower part of this view is dedicated to piano parameters.

Figure 5: Middle part of the interface with effects.

Figure 6: Lower part of the interface with piano parameters.

5.2.1 Compressor

The **Compressor** module is used to automatically compress, in other words reduce, the dynamics of a signal. This module receives two input signals. The first one is the signal to be compressed while the second one is a control signal which triggers the compression process when it rises above a given level.

The **Compressor** starts to enter into action once the input signal reaches a threshold value. The amount of compression applied to the part of the signal exceeding the threshold value depends on the *Ratio* parameter which varies between value of 1:1 and 1:16. This parameter represents the ratio, in dB, between the portion of the output signal from the compressor above the threshold value and the portion of its input signal also exceeding the threshold value. As one might expect, increasing the ratio also increases the amount of compression applied to the signal. For example, a ratio of 1:5 means that if the input signal exceeds the threshold by 5 dB, the output signal will exceed the threshold by only 1 dB.

5.2.2 EQ

The **EQ** module provides equalization over the low, mid, and high frequency bands. It is composed of a low shelf filter, two peak filters, and a high shelf filter in series, labelled **LF**, **LMF**, **HMF**, and **HF** respectively.

The functioning of the low shelf filter is depicted in Figure 7. The filter applies a gain factor to low frequency components located below a cutoff frequency (110 Hz) while leaving those above unchanged. The *LF* knob is used to adjust the gain factor applied to the signal in a $\pm$15dB range. In its center position there is no attenuation (0 dB). Turning it clockwise boosts the amplitude of low frequencies while turning it anti-clockwise reduces it.

The high frequency content of the signal is controlled with a high shelf filter that works in the opposite manner as the low shelf filter as illustrated in Figure 7. The filter applies a gain factor to components located above a cutoff frequency (4800 Hz) while leaving those below unchanged. The gain factor applied to the signal, in a $\pm$15dB range, is adjusted using *HF* knob. In its center position there is no attenuation (0 dB). Turning it clockwise boosts the amplitude of high frequencies while turning it anti-clockwise reduces it.

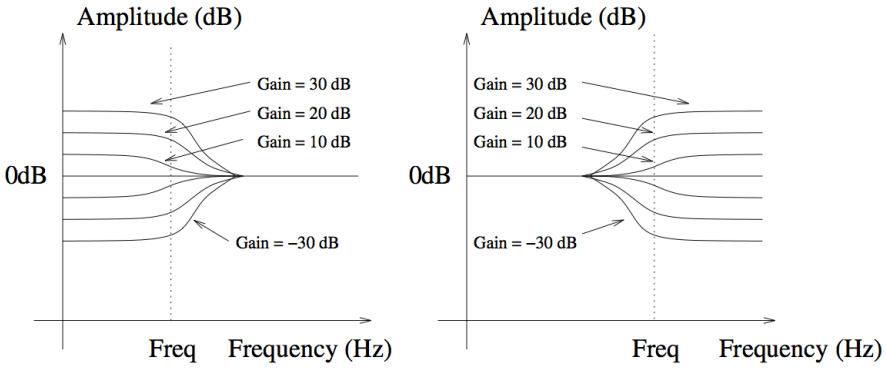


Figure 7: Low and high shelf filters.

The **EQ** module features two peak filters allowing to shape the signal in two frequency bands as illustrated in Figure 8. The filters apply a gain factor to frequency components in a band located around the cutoff frequency of the filters. This cutoff frequency of these two filters are located around 530 and 1600 Hz respectively. The gain factor applied a the cutoff frequency is controlled by the *LMF* and *HMF* knobs and can vary in a $\pm$15 dB range. When in its center position there is no attenuation (0 dB). Turning it clockwise boosts the amplitude of frequencies located around the cutoff frequency while turning it anti-clockwise reduces it.

5.2.3 Chorus

The chorus effect is used to make a source sound like many similar sources played in unison. It simulates the slight variations in timing and pitch of different performers executing the same part. The effect is obtained by mixing the original signal with delayed version obtained from the output of delay lines as shown in Figure 9. In the case of a chorus effect, the length of the delay lines must be short in order

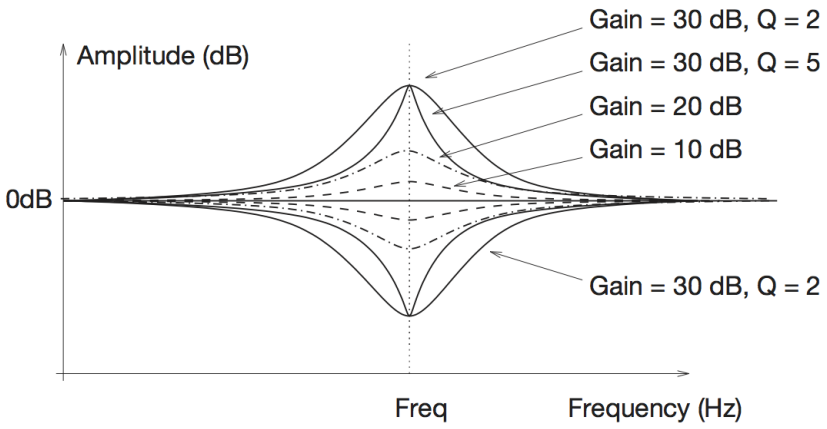


Figure 8: Peak filter.

for the delayed signals to blend with the original signal rather than be perceived as a distinct echo. The length of the delay line can be modulated introducing a slight perceived pitch shift between the voices.

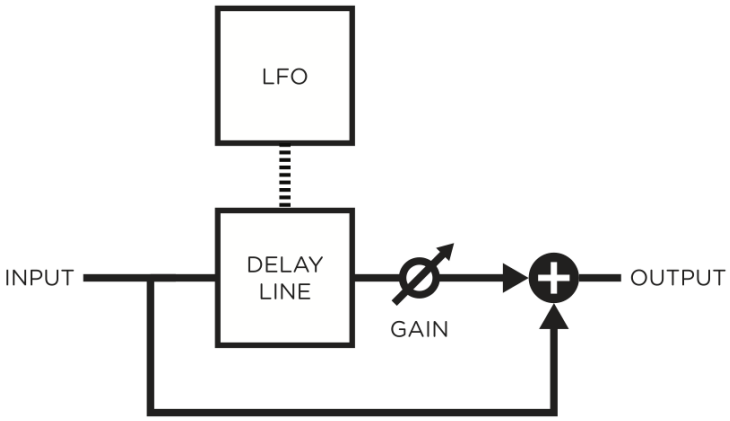


Figure 9: **Chorus** module.

The amount of modulation of the length of the delay lines is adjusted using the *Depth* knob. In the left position, there is no modulation and the length of the delay lines remains constant. As the knob is turned to the right, the length of the delay line starts to oscillate by an amount which increases as the knob is turned clockwise thereby increasing the amount by which the different voices are detuned.

5.2.4 Phaser

The **Phaser** module implements the effect known as *phasing* which colors a signal by removing frequency bands from its spectrum. The effect is obtained by changing the phase of the frequency components of a signal using an all-pass filter and adding this new signal to the original one.

The algorithm implemented in this module is shown in Figure 10. The input signal is sent into a variable all-pass filter. This wet signal is then mixed down with the original dry signal. A feedback line allows the resulting signal to be re-injected into the filter. The effect of the **Phaser** module is to introduce rejection in the spectrum of the input signal depending on the tuning of the filter.

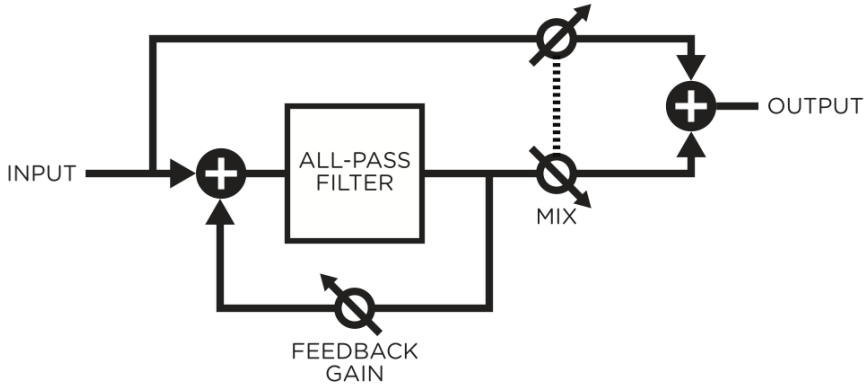


Figure 10: **Phaser** algorithm.

The all-pass filter modifies a signal by delaying its frequency components with a delay which increases with the frequency. This phase variations will introduce a certain amount of cancellation when this wet signal is mixed down with the original dry signal as shown in Figure 11. The rejection is maximum when the phase delay is equal to 180 degrees and a given component is out of phase with that of the original signal. The amount of effect is determined by the ratio of wet and dry signal mixed together as shown in Figure 11. As the amount of wet signal sent to the output is reduced, the amount of rejection increases. The shape of the frequency of the Phaser module is also influenced by the amount of wet signal re-injected into the feedback loop. Increasing the feedback enhances frequency components least affected by the all-pass filter. As the feedback is increased, these peaks become sharper. In *Lounge Lizard Session*, these parameters have been adjusted to optimal values for piano sounds.

The *Depth* knob is used to control the amount of modulation around the first notch in the frequency response of the module. In its leftmost position, the location of the first notch is fixed

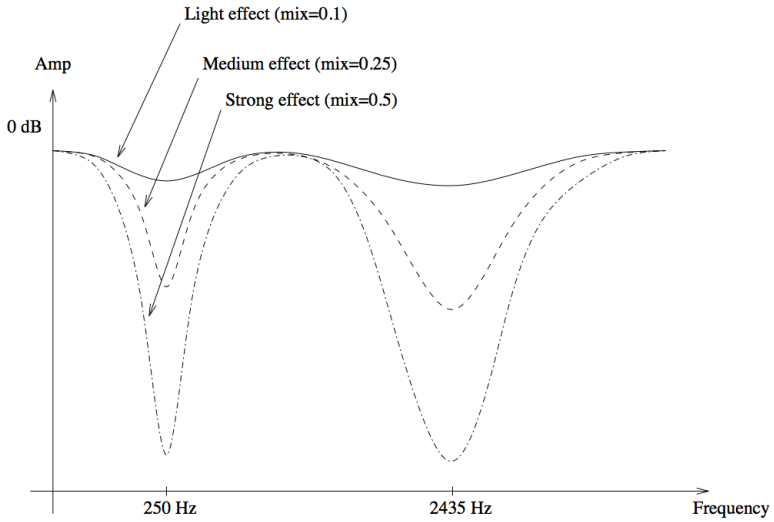


Figure 11: Frequency response of a **Phaser** module. Effect of the mix between wet and dry signal on the frequency response.

but it starts to oscillate by an amount which increases as the *Depth* knob is turned clockwise.

5.2.5 Reverb

The *Reverb* effect is used to recreate the effect of reflections of sound on the walls of a room or hall. These reflections add space to the sound and make it warmer, deeper, as well as more realistic since we always listen to instruments in a room and thus with a room effect.

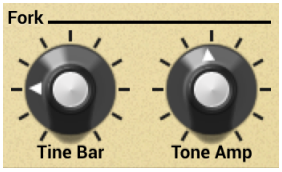
The ratio between the direct sound and the room response is adjusted with the *Mix* knob. This parameter is used to adjust the perceived distance between the source and the listener. In its leftmost position, only the direct sound is heard while when fully turned to the right, one only hears the room response.

5.2.6 The Hammer Module

The **Hammer** module is used to simulate the force impact produced by the piano hammer when striking the fork of the piano. The **Noise** knob is used to control the amount of noise generated during the impact between the hammer and the fork. Turning the knob clockwise increases the amplitude of the noise.

5.2.7 The Fork Module

The **Fork** module is at the heart of the sound generation mechanisms of the *Lounge Lizard Session*. The fork is the component that produces sound after being excited by the hammer. It has roughly the shape of a tuning fork with a small branch called the **Tine** and a larger one the **Tone** bar.



The tine is where the hammer hits the fork. It produces a high metallic sound very important for clear electric piano sounds. The amplitude of the tine signal present in the final sound from the fork is controlled with the help of the *Tine* knob. Turning the knob clockwise increases the presence of the tine in the final sound.

The tone bar is the biggest part of the fork, it is connected to the tine and starts to oscillate when the hammer hits the tine. The *Tone* knob is used to control the amplitude of the signal from the tone bar present in the final sound. Turning this knob clockwise results in a louder sound from the tone bar.

5.2.8 The Pickup Module

The **Pickup** module simulates the way a magnetic coil captures the sound of the fork in an electric piano.

The position of the pickup relative to the tine bar is a very important parameter in determining the tone of the instrument. Indeed, the shape of the signal measured by the pickup strongly depends on how it is positioned with respect to the tine bar as illustrated in Figure 12 for a wide range of tonal colors.

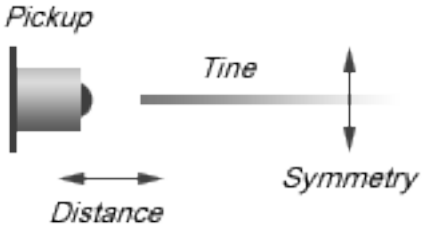
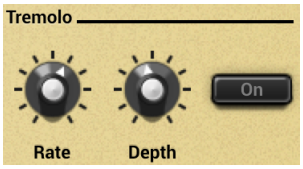


Figure 12: Position of the pickup relative to the tine bar.

The *Symmetry* knob is used to adjust the vertical position of the pickup relative to the tine bar. In its leftmost position, the pickup is right in front of the tine producing more harmonics in the sound. Turning the knob clockwise, moves the pickup above the tine resulting in a more mellow tone. Note that this control only allows one to move the pickup above the tine, this is because moving the pickup below the tine has the same effect on the spectrum of the sound as moving it above by the same amount.

5.2.9 The Tremolo Module



The **Tremolo** module, introduces low frequency amplitude modulation, or tremolo, in the sound. This is an effect extensively used with electric pianos. The effect is switched *on* or *off* using the *On* button.

The *Depth* is used to set the amount of modulation in the amplitude of the signal in other words the amount of tremolo effect. In its leftmost position, the amplitude is not modulated and turning the knob clockwise gradually increases the amplitude of the modulation.

The *Rate* knob controls the frequency of the modulation. Turning the knob clockwise increases this frequency and results in a faster modulation rate. Note that the *Depth* parameter can also be controlled by the modulation wheel on the *Lounge Lizard Session* interface or that from your MIDI keyboard as explained in Section 5.2.12

5.2.10 Character Knob

This parameter provides five (5) classic studio and stage signal path emulations, in other words the speaker, cabinet, pre-amp, microphone and recorder chain that follow the piano output and give different colors to the original piano sound. When this knob is in its leftmost position, no profile is applied and one can hear the direct output from the piano. Turning this knob to the right allows one to choose between the five different profiles which vary from less to more pronounce in character. Adding character might not always be necessary but it may help to find your sound to find its right place in a mix.

5.2.11 Pitch Wheel

The MIDI pitch wheel allows one to vary the pitch of the piano. The pitch wheel can be moved with the mouse but it is also automatically connected to the pitch wheel signal received from your MIDI keyboard.

The range of the pitch bend is 2 semi-tones up or down by default but can be changed. To adjust the range of the pitch bend, open the MIDI configuration window by clicking on the **MIDI** button located just below the MIDI let in the top part of the interface and use the **Pitch Bend Range** drop-down menu to select the range in semi-tones.

5.2.12 Modulation Wheel

The modulation wheel is linked to the *Depth* parameter of the **Tremolo** module. It can be activated on screen or from the modulation wheel of your MIDI controller (MIDI controller number 1). By default, the modulation wheel is inactive. The value of the *Depth* parameter of the **Tremolo** module

is then fixed by the value saved in the currently loaded program. Upon touching the modulation wheel, the *Trem* switch located below the wheel, starts to blink. Once this switch is turned *on*, the value of the *Depth* parameter follows the position of the modulation wheel. Note that the position of the *Trem* switch is not saved in a program which means that once it is turned *on*, it will remain so until it is switched *off* even if new programs are loaded.

5.2.13 Ribbon

The lower part of this view includes a ribbon controller. The ribbon covers seven octaves and notes are played when clicking on the ribbon. The ribbon is useful to test sounds when no MIDI keyboard is connected to your computer.

6 Utility Section

The utility section is located at the top of the *Lounge Lizard Session* interface and it includes important parameters and monitoring tools. For information on *Banks* and *Programs* please refer to Chapter 4

6.1 The MIDI LED

The MIDI LED is located on the left of the level-meter. The LED blinks when the synthesizer receives MIDI signal. If the application is not receiving MIDI signal, make sure that the host sequencer is sending MIDI to *Lounge Lizard Session*. If you are running in standalone mode, make sure that the MIDI controller you wish to use is well connected to your computer and that it is selected as explained in Section 7.

6.2 Polyphony

The *Voices* control located in the upper left corner of this section allows one to adjust the number of polyphony voices used by *Lounge Lizard Session*. The number of voices is adjusted by clicking on the control and selecting the desired number of voices. In general, a higher number of voices is desirable but keep in mind that the CPU load is proportional to the number of voices used.

6.3 Tuning

The *Tune* control, located to the right of the MIDI LED, is used to transpose the frequency of the keyboard. This control is composed of two numbers separated by a dot. The first number indicates a value in semi-tones while the second one indicates a value in cents (one hundredth of a semi-tone). The amount of transposition can be adjusted by click-dragging upward or downward on the semi-tone and cent controls. Double clicking on these controls brings back their value to zero. When the value of the *Tune* parameters is set to 0.00, the frequency of notes are calculated relative to A4 440Hz.

An interesting feature of *Lounge Lizard Session* is that it can be tuned using different temperaments using Scala micro-tuning files. Temperament files are loaded by clicking on the *Tune* button which opens the Tuning pop-up window and displays the list of available tuning temperament files available. By default, *Lounge Lizard Session* is set to stretched Temperament but equal

temperament is also installed. Other files can be added to the list by copying them to the following folders:

On Mac OS: /Users/[user name]/Library/Application Support/Applied Acoustics Systems/Scala Tunings/ On Windows:

These folders can be displayed directly from *Lounge Lizard Session* by clicking on the *Show Tuning Files* button at the bottom of the *Tuning* pop-up window.

Selecting a Scala file in the list automatically triggers the loading of the corresponding temperament. The reference note that will be used as the base note for the scale described in the Scala file can be set using the Reference Note control appearing at the bottom of the *Tuning* window. The frequency of this reference note is calculated relative to the settings of the *Tune* control.

6.4 History and Compare

The *History* control allows one to go back through all the modifications that were made to programs since the application was started. In order to travel back and forth in time, use the left and right-pointing arrows respectively. The application will switch between different program states and indicate the time at which they were modified.

The *Compare* button, located above the *Program* display, is used to switch between **Edit** and **Compare** mode. This button is visible only once a modification is applied to a given program. It allows one to revert to the original version of a program in order to compare it with the current version. When in **Compare** mode, edition is blocked and it is therefore not possible to modify any parameter. The **Compare** mode must then be switched off by clicking on the *Compare* button in order to resume edition.

6.5 Volume

The *Volume* knob is the master volume of the application. It is used to adjust the overall level of the output signal from the synthesizer. General level is increased by turning the knob clockwise.

6.6 Level Meter

The level meter allows one to monitor peak and RMS (root means square) level of the left (L) and right (R) output channels from the synthesizer. As a limiter is located at the output of *Lounge Lizard Session*, it is important to make sure that the amplitude of the signal remains within values that ensure that no distortion is introduced in the signal at the output.

The 0 dB mark on the level meter has been adjusted to correspond to -20 dBFS (full scale). This means that at that level, the signal is -20 dB below the maximum allowed value. This 0 dB level mark should typically correspond to playing at mezzo forte (moderately loud) level. This ensures a headroom of 20 dB which should be more than enough to cover the dynamics of most playing situations and therefore guarantee that no additional distortion is added in the output signal.

A peak value mark allows one to follow the maximum level values reached by the output signal. The limiter is triggered when this mark enters the red zone of the level meter (17 dB) and it remains active while the side vertical bars at the top of the lever meter are switched *On*.

6.7 The About Box

The **About** box is open by clicking on the chevrons located at the very top of the interface or on the product or company logo. The box is closed by clicking again on the chevrons or outside the box. Useful information is displayed in this box such as the program's version number, the serial number that was used for the authorization and the the email address that was used for registration. The box also includes a link to the pdf version of this manual.

7 Audio and MIDI Settings

This chapter explains how to select and configure Audio and MIDI devices used by *Lounge Lizard Session*. Audio and MIDI configuration tools are accessed by clicking on the *Audio Setup* button located in the lower left corner of the *Lounge Lizard Session* interface and the *MIDI* button located just below the MIDI led in upper part of the interface.

Note that in plug-in mode the audio and MIDI inputs, sampling rate, and buffer size are set by the host sequencer.

7.1 Audio Configuration

7.1.1 Selecting an Audio Device

Audio configuration tools are available by clicking on the *Audio Setup* button located in the lower left corner of the *Lounge Lizard Session* interface. The **Audio Setup** dialog first allows you to select an audio output device from those available on your computer. Multi-channel interfaces will have their outputs listed as stereo pairs.

On Windows, the audio output list is organized by driver type. The device type is first selected from the **Audio Device Type** drop-down list. If you have ASIO drivers available, these should be selected for optimum performance. The *Configure Audio Device* button allows you to open the manufacturer's setup program for your audio interface when available.

Once the audio input has been selected, you can then select a sampling rate and a buffer size from those offered by your audio interface.

7.1.2 Latency

The latency is the time delay between the moment you send a control signal to your computer (for example when you hit a key on your MIDI keyboard) and the moment when you hear the effect. Roughly, the latency will be equal to the duration of the buffers used by the application and the sound card to play audio and MIDI. To calculate the total time required to play a buffer, just divide the number of samples per buffer by the sampling frequency. For example, 256 samples played at 48 kHz represent a time of 5.3 ms. Doubling the number of samples and keeping the sampling frequency constant will double this time while changing the sampling frequency to 96 kHz and keeping the buffer size constant will reduce the latency to 2.7 ms.

It is of course desirable to have as little latency as possible. *Lounge Lizard Session* however requires a certain amount of time to be able to calculate sound samples in a continuous manner. This time depends on the power of your computer, the preset played, the sampling rate, and the number of voices of polyphony used. Note that it will literally take twice as much CPU power to process audio at a sampling rate of 96 kHz as it would to process the same data at 48 kHz, simply because you need to calculate twice as many samples in the same amount of time.

Depending on your machine you should choose, for a given sampling frequency, the smallest buffer size that allows you to keep real-time for a reasonable number of voices of polyphony.

7.2 MIDI Configuration

7.2.1 Selecting a MIDI Device

The list of available MIDI inputs appears at the bottom of the **Audio Setup** dialog. Click on the *Audio Setup* button located in the lower left corner of the *Lounge Lizard Session* interface and then click on the checkbox corresponding to any of the inputs you wish to use.

7.2.2 Creating MIDI Links

Every control on the *Lounge Lizard Session* interface can be manipulated by an external MIDI controller through MIDI control change assignments. In most cases this is much more convenient than using the mouse, especially if you want to move many controllers at once. For example, you can map the motion of a knob on the interface to a real knob on a knob box or to the modulation wheel from your keyboard. As you use the specified MIDI controllers, you will see the controls move on the *Lounge Lizard Session* interface just as if you had used the mouse.

In order to assign a MIDI link to a controller:

- On the *Lounge Lizard Session* interface, right-click/Control-click on a control (knob, button) and select the **MIDI Learn** command.
- Move a knob or slider on your MIDI controller (this can be a keyboard, a knob box, or any device that sends MIDI). This will link the control of the *Lounge Lizard Session* to the MIDI controller you just moved.

To deactivate a MIDI link, simply righ-click/Control-click on the corresponding control on the *Lounge Lizard Session* interface and select the **MIDI Forget** command.

7.2.3 Creating a default MIDI Map

It is possible to define a a set of MIDI links, called a MIDI map, that will be loaded automatically when *Lounge Lizard Session* is launched. Once you have defined a set of MIDI links that you wish to save, click on *MIDI* button to open the *MIDI* configuration window and click on the **Save Current as Default** button.

If you make changes to MIDI links after opening the program and wish to revert to the default MIDI map click on *MIDI* button to open the *MIDI* configuration window and click on the **Load Default** button.

If you wish to deactivate all the MIDI links at once open the *MIDI* configuration window and click on the **Clear MIDI Map** button.

7.2.4 MIDI Program Changes

Lounge Lizard Session responds to MIDI program changes. When a program change is received, the current program is changed to the program having the same number as that of the program change message in the currently loaded bank.

If you do not wish *Lounge Lizard* to respond to MIDI program changes, open the *MIDI* configuration window by clicking on the *MIDI* button and uncheck the **Enable Program Changes** option.

7.2.5 MIDI Bank Changes

In general, MIDI bank numbers are coded using two signals: the MSB (most significant byte) and LSB (least significant byte) transmitted using MIDI CC (continuous controller) number 0 and 32 respectively. The way these signals are used differs with different manufacturers.

In the case of *Lounge Lizard Session*, the value of the MSB signal is expected to be zero while the value of the LSB signal represents the bank number. Banks are therefore numbered from 0 to 127 with this number corresponding to the position of a bank within the list of banks as displayed by the Bank manager (see Section 4.3). For example, an LSB value of 0 corresponds to the first bank in the bank list while an LSB value of 10 corresponds to the eleventh bank in the list. Note that a bank change only becomes effective after the reception of a new MIDI program change signal.

If you do not wish *Lounge Lizard Session* to respond to MIDI bank changes, open the *MIDI* configuration window by clicking on the *MIDI* button and uncheck the **Enable Bank Changes** option.

7.2.6 Pitch bend

The MIDI pitch wheel allows one to vary the pitch of *Lounge Lizard Session*. The pitch wheel can be moved with the mouse but it is also automatically connected to the pitch wheel signal received from your MIDI keyboard.

The range of the pitch bend is 2 semi-tones up or down by default but can be changed. To adjust the range of the pitch bend, open the MIDI configuration window by clicking on the **MIDI** button located just below the MIDI let in the top part of the interface and use the **Pitch Bend Range** drop-down list to select the range in semi-tones.

7.2.7 Modulation wheel

Lounge Lizard Session responds to MIDI modulation (MIDI controller number 1). For more details, please refer to Section 5.2.12.

8 Using *Lounge Lizard Session* as a Plug-In

Lounge Lizard Session is available in VST, RTAS and AudioUnit formats and integrates seamlessly into the industry most popular multi-track recording and sequencing environments as a virtual instrument plug-in. *Lounge Lizard Session* works as any other plug-in in these environments so we recommend that you refer to your sequencer documentation in case you have problems running it as a plug-in. We review here some general points to keep in mind when using a plug-in version of *Lounge Lizard Session*.

8.1 Audio and MIDI Configuration

When *Lounge Lizard Session* is used as a plug-in, the audio and MIDI ports, sampling rate, buffer size, and audio format are determined by the host sequencer.

8.2 Automation

Lounge Lizard Session supports automation functions of host sequencers. All parameters visible on the interface can be automatized except for the **Polyphony**, **Bank**, **Program** and **History** commands.

8.3 Multiple Instances

Multiple instances of *Lounge Lizard Session* can be launched simultaneously in a host sequencer.

8.4 MIDI Program Change

MIDI program changes are supported in *Lounge Lizard Session*. When a MIDI program change is received by the application, the current program used by the synthesis engine is changed to that having the same number, in the currently loaded bank, as that of the MIDI program change message.

8.5 Saving Projects

When saving a project in a host sequencer, the currently loaded program is saved with the project in order to make sure that the instrument will be in the same state as when you saved the project when you re-open it. Note that banks of programs are not saved with the project which implies that if you are using MIDI program changes in your project, you must make sure that the bank you are using in your project still exists on your disk when you reload the project. The programs must also exist and be in the same order as when the project was saved.

8.6 Performance

Using a plug-in in a host sequencer requires CPU processing for both applications. The load on the CPU is even higher when multiple instances of a plug-in or numerous different plug-ins are used. To decrease CPU usage, remember that you can use the **freeze** or **bounce to track** functions of the host sequencer in order to render to audio the part played by a plug-in instead of recalculating it every time it is played.

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