

Moon Echo

User Guide

v1.0

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Moon Echo

Moon Bounce Simulator

In our seventh collaboration with Berlin-based musician **Hainbach** we listen to the stars: [Moon Echo](#) is a free to download delay based on a communications technique that uses our closest cosmic neighbor, the moon, as a reflector for radio waves. This results in some rather crunchy and lively echoes, modulated by the movement of Earth and moon. The moon's surface is an imperfect mirror and creates artifacts, unlike any other echo technique. Moon Echo is both a musical lo-fi effect and a playful tool for teaching about space.

History of Moon Bounce

That the moon can be an odd reflection in radio broadcasting was discovered by German radio operators during the Second World War. However, it was only after the war that moon bouncing was developed as a communications technique. First, the US military made use of it, but amateurs caught on quickly in the 1950s. With the advent of satellites, it became obsolete for defense applications, but radio amateurs are still connecting through the moon to this day with each other.

Historic applications in music

Composer Pauline Oliveros (May 30, 1932 – November 24, 2016) is the most notable composer working with the moon in her music. Her composition "Echoes from the Moon", which she first realized in 1987, saw her duet the moon with a conch shell, tin whistle, and accordion. She expressed regret that the process was either send or receive, so you could not use the moon as a true delay line. With Moon Echo, you can now do just that, albeit simulated.

Making Moon Echo Plugin

With the help of Martine-Nicole Rojina, Hainbach got in contact with CAMRAS in Dwingeloo, who work with a big radio telescope dish. They graciously agreed to let us work with this historic multi-million Euro instrument for a moon bounce, allowing Hainbach to send test signals, voice and human test tones by sopranoist Johanna Vargas, and double bassist Paul Cannon, as well as signals from his supporters on Patreon to the moon. Especially the extended techniques used by Cannon and Vargas on their respective instruments tested the transmission limits. This gave us a much more varied set of samples to model Moon Echo on than simple test beeps and sweeps could have done.

Every moon bounce is different, and since our model is only based on one day in one location, we can't claim it to be accurate. But what it is, is a fun and inspiring look into the musical applications of space research.

Moon Echo in use

Whether you want to simulate space radio communications for a video game or movie, or discover the experimental music techniques pioneered by Pauline Oliveros, learn or teach about space exploration and telecommunications, or you need a special lofi tone for your beat, Moon Echo can be all that.

It sounds bad in a good way, with many interesting modulations happening under the hood. It rewards a closer listen.

On the first try keep the transmit setting on and keep it in Duplex mode. This way you have two dishes active - one that sends and one that receives.

Moon Echo will act as any other musical delay, like [Wires](#) or [Outer Space](#). It can be very rewarding to adjust doppler shift while playing with delay time and feedback. It is possible to create endlessly modulating soundscapes that way. If Moon Dust gets a little bit too much, use the Dust Envelope in the dot menu to the top right.

If you switch to simplex mode, you are in the radio transmission mode as Hainbach experienced at Dwingeloo. You have only one dish at your disposal that either sends or receives. If transmit is on you send signals to the moon, and if transmit is off will hear the echo. We did model the sound of the transceiver itself, so your sound will be affected even if transmit is off. If you want the accurate distance to the Moon, press "Ping Moon" and the plugin will try to connect to NASA for that data.

Installation

macOS

- Double click on the DMG archive to extract it
- Right click on the PKG installer and click open
- Follow the instructions to install the plug-in(s)

Windows

- Extract the ZIP archive
- Double click on the setup file (.exe)
- Follow the instructions to install the plug-in(s)

Linux

- Extract the tarball archive
- Run `./install.sh`
- Follow the instructions to install the plug-in(s)

Parameters

<i>Transmit</i>	Sends the incoming signal to the Moon.
<i>Simplex</i>	Radio transmission mode, you can either send signals to the Moon or receive echoes, but not both simultaneously. When Transmit is on, you send signals to the Moon. Turn Transmit off to hear the echo.
<i>Duplex</i>	Both sending and receiving are active simultaneously with two dishes - one for transmitting and one for receiving. Keep the transmit setting on for continuous communication.
<i>Ping Moon</i>	Connects to NASA's Horizons System to get the current distance from Dwingeloo to the Moon.
<i>Doppler</i>	Controls the amount of frequency shift in the incoming signal from the Moon.

Mods to Space Time

<i>Time</i>	Adjust the distance to the Moon, which changes the echo time.
<i>Feedback</i>	Controls the amount of feedback in the echo.
<i>Moon Dust</i>	Controls the amount of background noise in the signal from the Moon.

Master

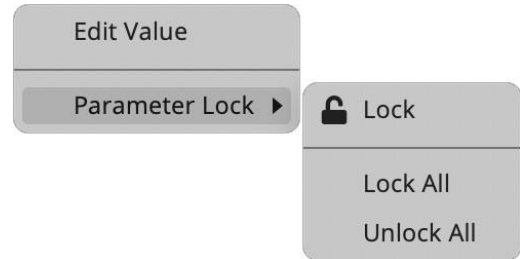
<i>Input</i>	Controls the amount of input signal.
<i>Mix</i>	Controls the mix between Dry and Wet signals.
<i>Output</i>	Controls the amount of output signal.

Features

Parameter Lock

If you want to keep the value of one or more parameters while changing presets, or when using the randomizer button, you can use the *Parameter Lock* feature.

Right click on a parameter and choose *Parameter Lock*.



Lock / Unlock

If locked, the parameter won't be updated when changing presets

Lock All

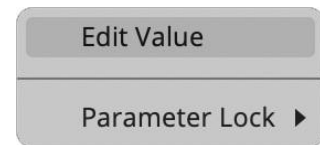
Locks all parameters


Unlock All

Unlocks all parameters

Edit Value

You can also manually change the value for knobs and sliders. Right-click on a parameter and choose *Edit Value*. You can also access this feature with SHIFT + Click.



By clicking on the icon  you can access additional features.

Clear Buffer

When enabled, every time your host/DAW starts playback or resets, the plugin will clear the feedback loop of the Echo section. You have two options: Host Playback and Host Reset. Since every DAW is different, you might need to try both settings to see what works best in your system.

Dust Envelope

Enables/Disables the envelope to activate the Moon Dust noise only when an input signal is passing through.

Preset Copy / Paste

You can easily share presets by using this Copy/Paste feature.

Copy to Clipboard The status of all parameters will be saved to the Clipboard

Paste from Clipboard Load a preset from the Clipboard

Enable / Disable Notifications

You can enable or disable the notifications for updates and news (shown by the bell icon). This option is global and it will affect all AudioThing plugins.

Swap Mouse Buttons

If you are using the right button as your primary mouse button, the plugin might not recognize it. Use this option to enable it internally in the plugin.

This option is global and it will affect all AudioThing plugins.

GUI Acceleration

You can enable or disable the GUI acceleration supported by your system.

Graphics Controls

This feature allows you to modify the User Interface's Brightness and Contrast.

Window Size

You can resize the plugin window using three predefined sizes (*small, standard, big*).

You can also resize the plugin window by clicking and dragging the bottom-right corner of the interface. Double-clicking will reset to the standard size.

End

Where is everything?

The installer will place the plugins, presets, and other data in these folders.

macOS

AU /*Library/Audio/Plug-ins/Components/*
VST /*Library/Audio/Plug-ins/VST/*
VST3 /*Library/Audio/Plug-ins/VST3/*
AAX /*Library/Application Support/Avid/Audio/Plug-Ins/*
CLAP /*Library/Audio/Plug-ins/CLAP/*
Data /*Users/Shared/AudioThing/*

Windows

VST *custom path from installer*
VST3 *Program Files\Common Files\VST3*
AAX *Program Files\Common Files\Avid\Audio\Plug-Ins*
CLAP *Program Files\Common Files\CLAP*
Data *Users\Public\Public Documents\AudioThing*

Linux

VST ~/.*vst/*
VST3 ~/.*vst3/*
CLAP ~/.*clap/*
Data ~/.*local/share/AudioThing/*

Credits

DSP & Code *Carlo Castellano*
Idea *Hainbach*
Design *John Gordon*

Thanks To

Everyone at CAMRAS, Paul Cannon, D.W. Harms, Jan van Muijlwijk, Harm Munk, Martine-Nicole Rojina and Johanna Vargas.

EULA

Please visit www.audiothing.net/eula/ to review this product EULA.

Thank You

Thank you for your purchase! We hope you will have as much fun using it as we had making this product.

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