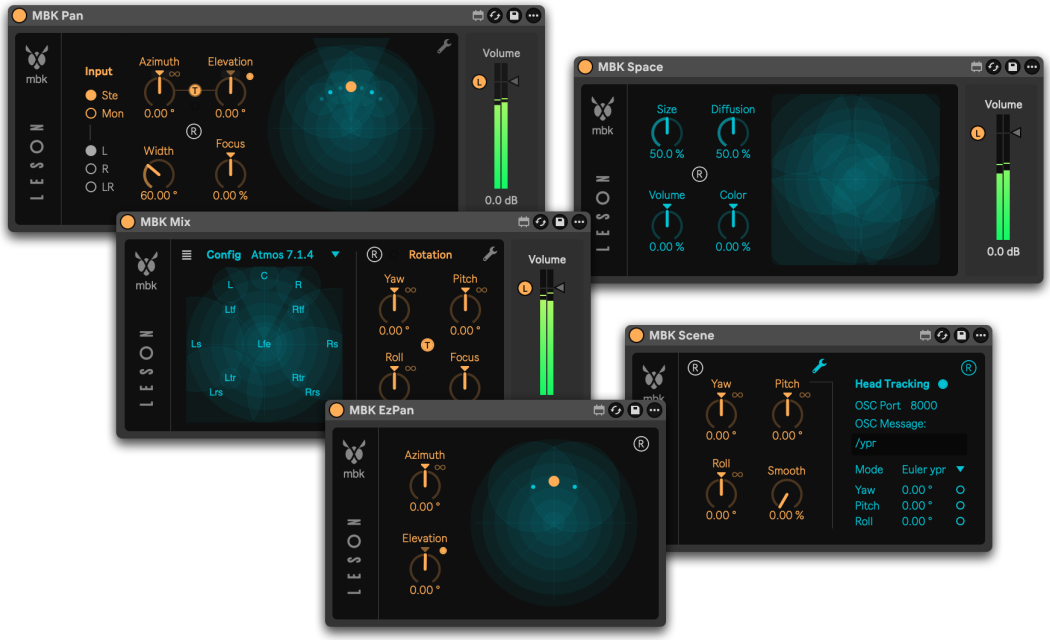
MyBeeKnows for Live



MyBeeKnows for Live — the full device suite

Welcome to MyBeeKnows by LESON

MyBeeKnows — aka MBK — is a **real-time binaural synthesis technology** that uses a universal set of HRTFs (Head-Related Transfer Functions) to perform seamless 3D binaural spatialization. MyBeeKnows can process channel-based mono, stereo and multichannel signals as well as high-order 3D ambisonic signals.

The main quality of MyBeeKnows, in addition to its efficiency in terms of calculation time, is the great transparency of the audio rendering, which can thus be listened to both on headphones and speakers.

Available Devices

MyBeeKnows is now available for Ableton Live, as a suite of audio devices implemented in Max For Live. The MyBeeKnows for Live pack offers four complementary tools allowing audio mixing using binaural synthesis, plus a simplified fifth tool:

- **MBK Pan**: Mono/stereo binaural panner
- **MBK Space**: Binaural reverberator
- **MBK Mix**: Multichannel/ambisonics binaural monitor
- **MBK Scene**: Manipulation of a binaural soundstage with headtracking
- **MBK EzPan**: Minimum version of MBK Pan for simplified binaural panning

Example Sessions 🎧 use headphones!

Click on the links below to load examples of binaural mixing sessions using MBK Pan, MBK Space and MBK Scene:

- ♪ Demons Radio Edit *(Demo Sets/MBK Pan Demons Radio Edit.als)*
- ♪ India Song *(Demo Sets/MBK Pan India Song.als)*
- ♪ Singing Trees *(Demo Sets/MBK Pan Singing Trees.als)*

These sessions offer a binaural mix of multiple stems forming a single soundstage and using a shared binaural room effect. It is possible to compare the binaural mix with the standard stereo version by engaging the Solo function on each group of tracks.

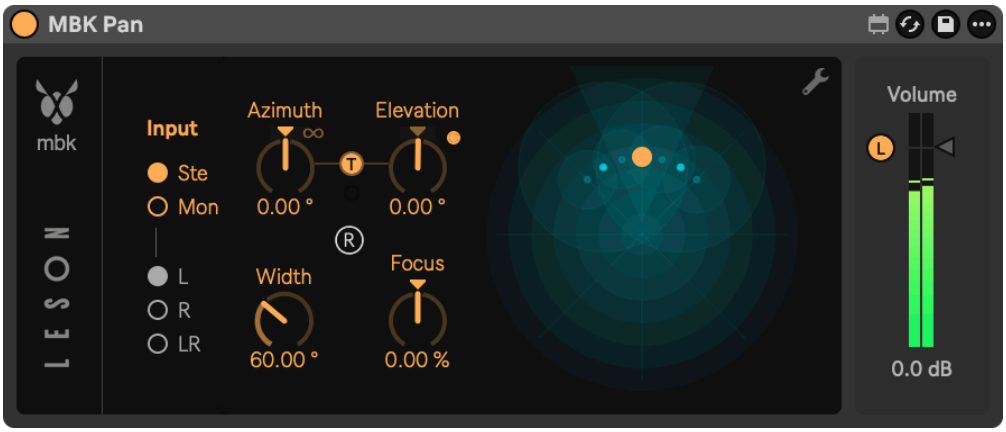
Click on the links below to load examples of binaural downmixing sessions using MBK Mix, MBK Space and MBK Scene:

- ♪ Surround Panner *(Demo Sets/MBK Mix Surround Panner.als)*
- ♪ Multichannel Sources *(Demo Sets/MBK Mix Multichannel Sources.als)*

These sessions provide a downmix of a multichannel stream, either from a real-time mix (multichannel panning) or a pre-recorded mix (audio files).

MBK Pan

MBK Pan device



The MBK Pan device

The MBK Pan device allows you to place a stereo or mono source from a Live track in a virtual 3D hearing space, and to manipulate its position and radiation using simple settings. To create a binaural mix in Live, simply drag MBK Pan into each track you want to process.

The device features optional early reflections whose position varies depending on that of the direct sound. This improves source localization and spatial perception. The early reflections can also be fed into a global ambience effect provided by the MBK Space device.

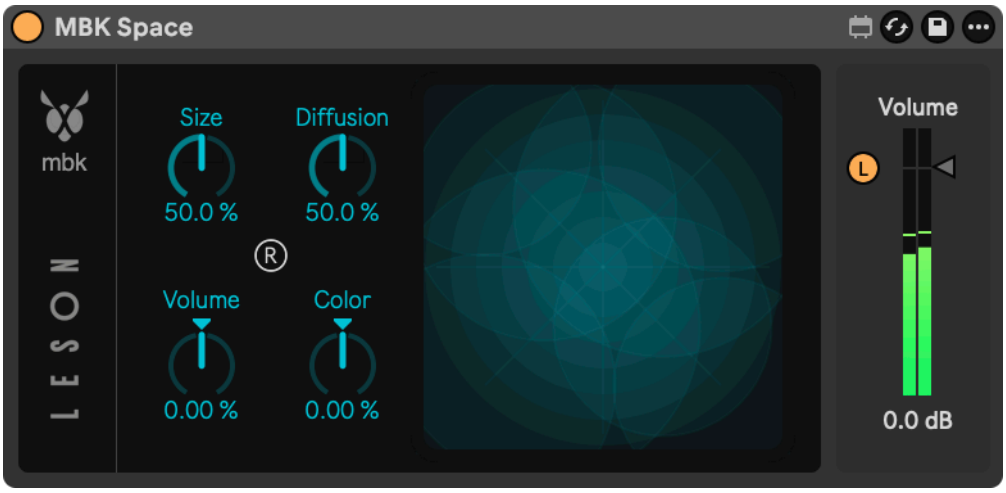
Parameters

Use Live's Info window to view a parameter's description. Live's Info window displays the name and function of the element you're hovering over.

You can show or hide the Info window using the "i" button in the lower-left corner of the Live window or by pressing the "?" key.

MBK Space

MBK Space device



The MBK Space device

The MBK Space device is a reverberator that can receive early reflections from all MBK Pan and MBK Mix devices present in the Live set, and distribute these reflections in a resonant 3D space that is also binaural. It has very simple settings allowing you to define the character of the room.

The device is typically placed on a Return track, like a classic reverberator. In addition to early reflection channel inputs from MBK Pan and MBK Mix devices, it also has two audio inputs, allowing it to be accessed from the Sends of each non-binaural track.

MBK Space shares its timing data with MBK Pan and MBK Mix using the name of the track that contains it. When multiple instances of MBK Space are present in the same session, and multiple instances of MBK Pan and MBK Mix are linked to one or more of these instances, the names of the tracks containing the MBK Space instances must be distinct.

Parameters

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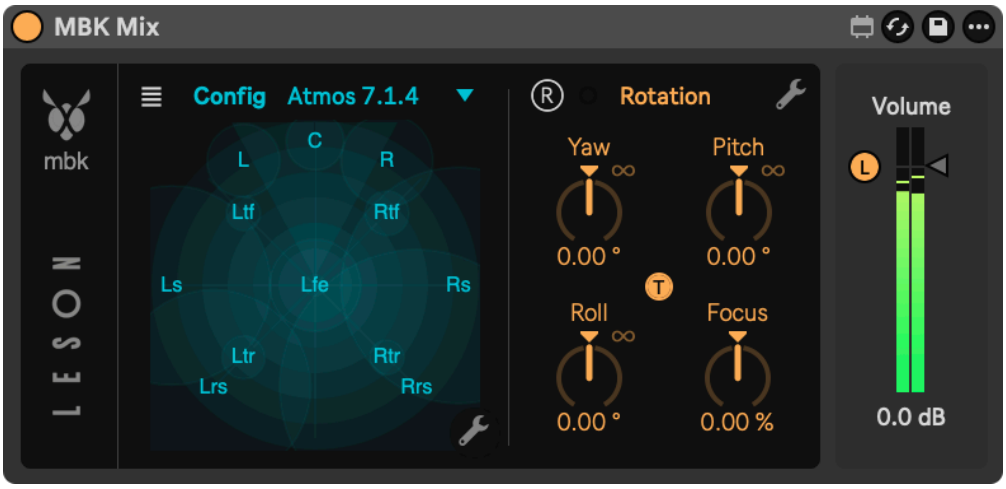
MBK Mix

MBK Mix device



MBK Mix — channel-based configuration (Atmos 7.1.4)

The MBK Mix device allows you to listen to multichannel audio sources from audio inputs or other Live tracks, and project them into the binaural auditory space. This allows two very useful applications for those involved in sound spatialization in Live.

The first application is the virtual space session: in order to continue multichannel mixing outside of a studio or an equipped room, it is possible to virtualize the speakers and listen to the spatial session through headphones. For instance, consider a multichannel mixing session using Live's Surround Panner — which is an integral part of Live — with eight spatial channels running through four Return tracks, and where each Return Track is routed to a pair of speakers.

MBK Mix listens to the Return tracks and can project their audio into the same speaker configuration set in Surround Panner, but this time through the headphones.

The second application of MBK Mix is the binaural virtualization of a multichannel stream from a 5.1 or 7.1.4 type mix, or from an ambisonic soundfield microphone, once the multichannel audio streams have been split into mono files or tracks — since Ableton Live only supports playback of mono or stereo files. To route a track's output to an MBK Mix input, simply use Live's standard track routing mechanism: from a track's Audio To menu, select the track containing MBK Mix. Then use the submenu to specify the target input for MBK Mix.

MBK Mix allows you to define a multichannel input format using standard presets (5.1, 7.1, 7.1.4, etc.) or customizable User configurations.

MBK Mix — ambisonic configuration (4th order)

MBK Mix is able to process channel-based multichannel streams (surround, Atmos bed, etc.) up to 32 channels and ambisonic multichannel streams up to 25 channels (4th order).

The orientation of the soundstage produced by the surround mix can be adjusted in 3D using the navigation controls. The device also incorporates the same early reflection effect as the MBK Pan, and the early room reverberation effect can be fed into the MBK Space device to create an overall late reverberation effect.

Parameters

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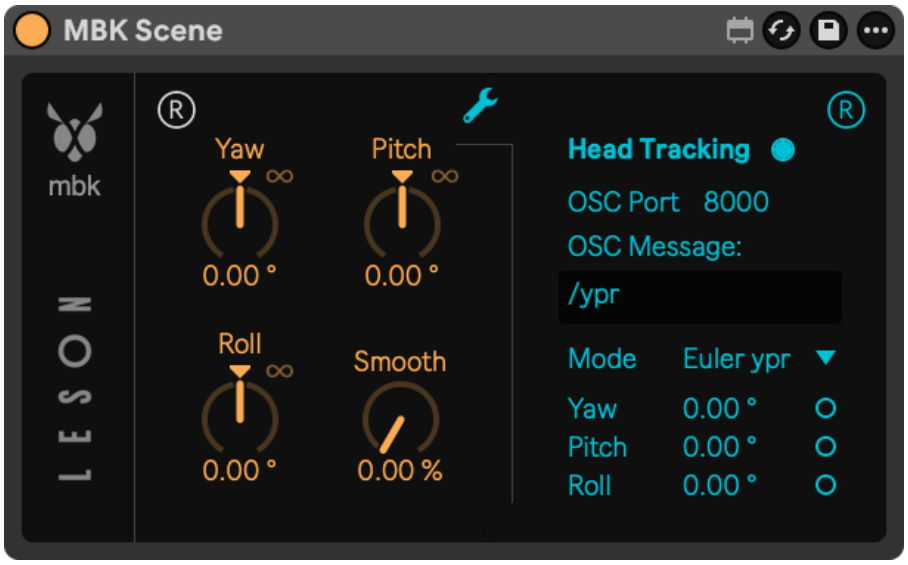
MBK Scene

MBK Scene device



The MBK Scene device

The MBK Scene device is a utility that lets you manipulate the overall soundstage produced by all MBK Pan and MBK Mix devices in the session, by performing a 3D rotation using navigation settings.

The MBK Scene device also features an Open Sound Control input that provides the control in 3D of orientation of the soundstage using a headtracker. This allows for a more lively mixing experience.

The orientation data indicates the direction the head is facing, and the source positions defined in the MBK Pan devices, or the speaker positions defined in the MBK Mix device are compensated accordingly.

To adapt MBK Scene to a given headtracker, simply enter the OSC message and the type of orientation data produced by the tracker, as in the example above, which works with Supperware's Bridgehead head-tracking device.

By default, tracking in MBK Scene is configured to work with data from Supperware's Bridgehead app as follows:

- OSC message: "/ypr" (yaw, pitch, roll)
- UDP port: 8000
- UDP port for tracker reset message: 9010

Parameters

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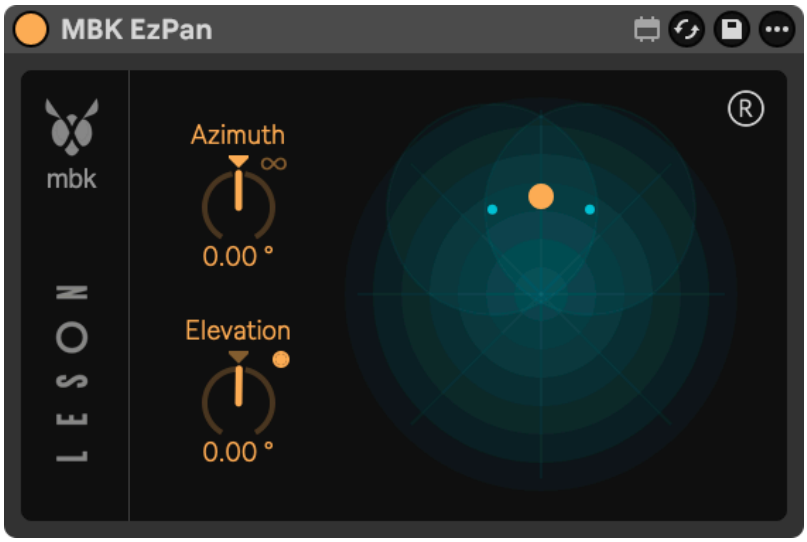
MBK EzPan

MBK EzPan device



The MBK EzPan device

MBK EzPan is a streamlined version of MBK Pan, designed to simplify binaural panning. MBK EzPan lets you place a stereo source from a Live track within a virtual 3D listening space and adjust its position using simple controls. To create a basic binaural mix in Live, simply drag MBK EzPan onto each track you want to process.

Credits

MyBeeKnows is developed by LESON, a French creation and research studio focused on the quality of sound reproduction.

It is co-developed with the Ecole Polytechnique de Paris and the Conservatoire National Supérieur de Musique et Danse de Paris.

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