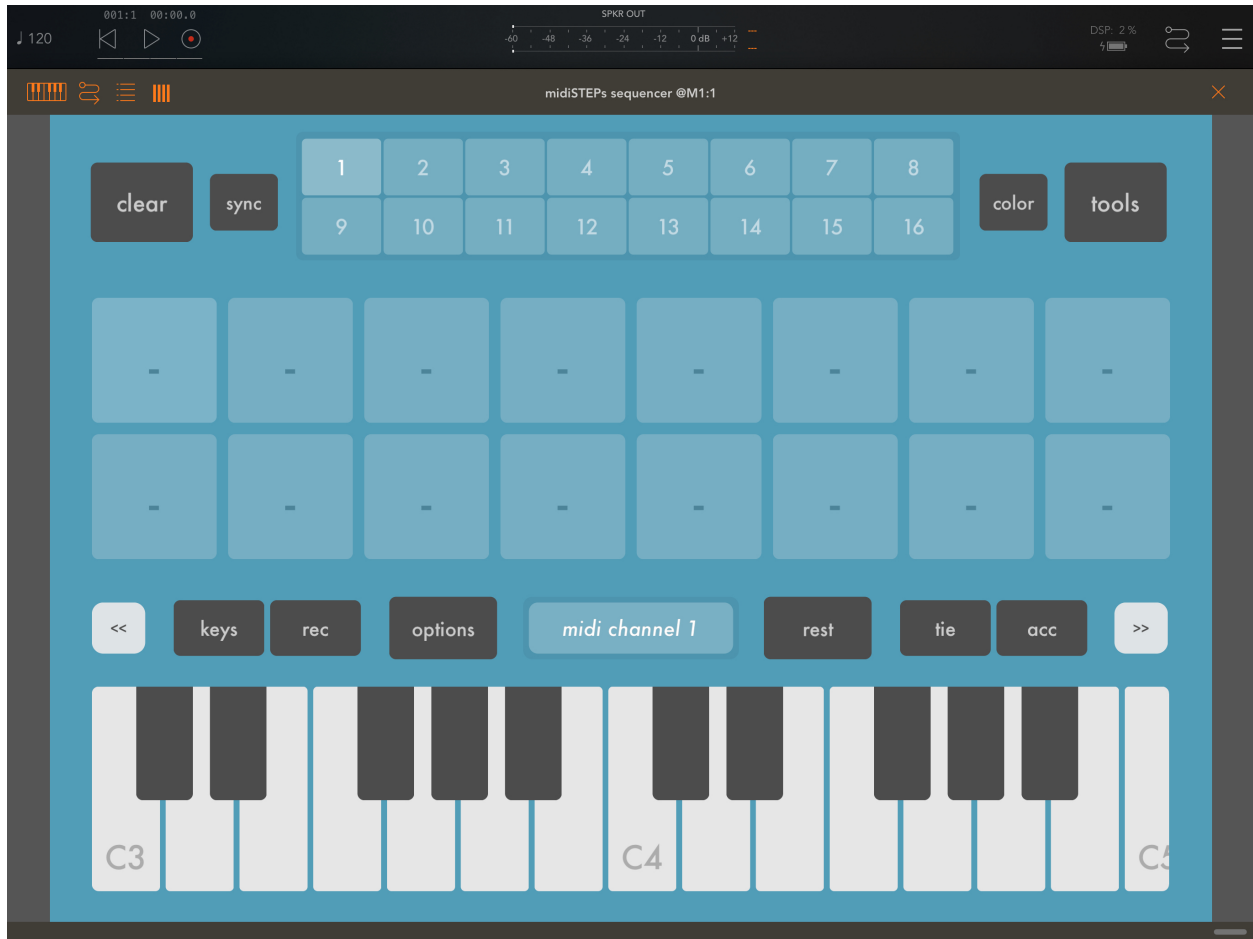


# midiSTEPs

midi AUv3 step sequencer plugin



app v3.0.2, user manual v3.0.0

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### **New in v3.0**

#### **midi AUv3 support**

You can now use midiSTEPS as an AUv3 plugin in any MIDI AUv3 capable host, such as Audiobus, AUM, Cubasis 3, ApeMatrix, etc. You can add multiple instances of midiSTEPS to get as many sequences going as you want.

#### **Mono/Poly randomization mode**

When mono mode is turned on in the Options menu, a step with multiple notes will randomly choose one of those notes to play. When in poly mode it will play all notes as a chord.

#### **Misc bug fixes and improvements**

## **Introduction**

Welcome to midiSTEPS!

midiSTEPS is an easy to use but powerful AUv3 MIDI step sequencer plugin for the iPad. It is based on the classic SH-101 sequencer, with some additional possibly interesting features included and a touch-based user interface designed for the iPad.

The primary appeal of the SH-101 sequencer is its simplicity and ease of use: you just hit record, tap a few notes on the keyboard, hit start, and it starts playing those notes. Record some notes, maybe with some rests and accents or a tie thrown in, and then play the sequence. Straightforward, useful and simple in a world of feature-filled but sometimes very complicated and confusing sequencers.

Once I had gotten midiSTEPS working in a similarly simple way to the 101, I started adding some more features to it. But as I did so I kept reminding myself that simplicity was the whole point and tried my best to hide the added complexity. If you aren't interested in the additions you hopefully won't have to pay much attention to them.

With midiSTEPS you can switch between sixteen different sequences, play chords, record CC values per step, change the start/stop points of the sequence or mute/skip steps, sync everything to your AU host or instead trigger steps from external notes, play with probability of various functions, and other fun stuff. But if you just want to record a few notes and then hit play and have those notes sent as MIDI to your synth, repeating over and over, you can do that too and you won't have to think too hard about how to do it.

If you like midiSTEPS you should also check out my MIDI AUv3 plugin midiLFOs, which gives you four easy to use, sync-able, modulate-able LFOs that send MIDI CC data to other plugins, apps or synths.

Thanks for buying midiSTEPS! I hope you have a lot of fun making some great music with it.

## **AUv3 plugin vs the original app**

midiSTEPs started as a standalone CoreMIDI app designed to send MIDI to external instruments and other apps. Later it added AUv3 instrument hosting so you could control AUv3 plugins directly from within the app. Now with version 3.0, midiSTEPs has itself become an AUv3 plugin allowing it to be directly loaded into hosts like AUM and Audiobus to control other plugins.

I will be focusing on the AUv3 plugin version moving forward as that seems to be the way things are headed for sequencers in the iOS music making world. I will try to keep the standalone app working but most of my energy and new ideas will go into the plugin. Unfortunately, developing the MIDI AUv3 plugin code required a complete rewrite of the app, so the standalone and plugin use a completely different codebase and keeping both in sync is not at all practical. Also, Apple's deprecation of the Inter-App Audio API will limit the future capabilities of the standalone app and seems to be a suggestion by Apple that they would prefer things to move towards the audio unit paradigm.

There are many benefits of the AUv3 approach: the ability to use as many instances of the sequencer as you want, automatic state saving of midiSTEPs and all the other plugins in your project, improved control and automation through the use of AU parameters, and more. Once you start using the AU workflow it is hard to go back. But there is also something to be said about the standalone app workflow where a single app takes over the whole screen and gets your undivided attention. That was a big part of the reason the iPad became popular for music making instead of using plugins in a DAW on a computer. Two steps forward, one step back. So it goes.

Anyway, the AUv3 plugin will be where future development of the app happens. Thus, this manual has been re-written to focus on the features and interface of the plugin.

### **New features in the AUv3**

- Mono/poly random mode, chord steps randomly pick one of the notes
- Choose the background color
- Longer note divisions
- AU parameter control

### **New workflow of the AUv3**

- Start/stop sequence is now controlled by AU host
- Tempo is now controlled by AU host
- Use multiple midiSTEPS AUv3 instances instead of multiple parts
- AU parameters are used instead of MIDI mapping
- Sets are now saved by the AU host

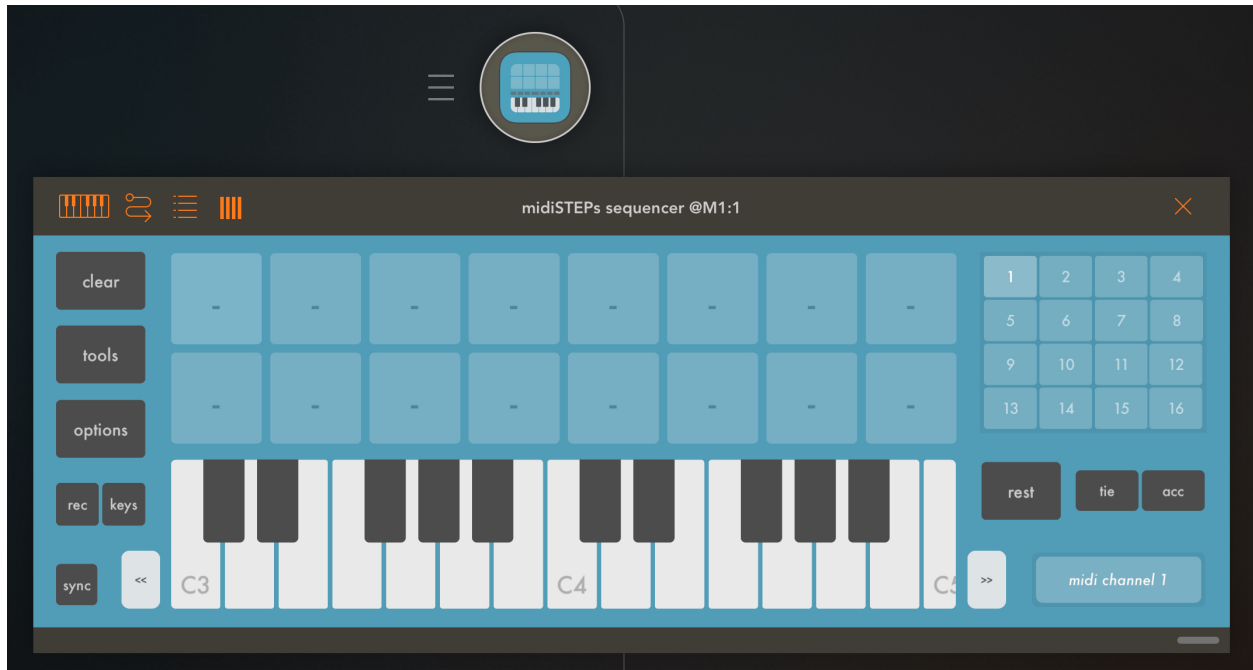
### **Missing features in the AUv3**

- Pattern mix page
- Settings menu
- MIDI program change send
- One shot option
- Some sync options
- Keyboard musical key configuration
- Record MIDI velocity with step
- Some tools functions



### Full screen UI vs default size AU

The user interface of the AUv3 version of midiSTEPs adjusts to fit the size of the window that the AUv3 host provides it. Depending on that size the midiSTEPs plugin will either use the full screen style UI of the original standalone app, or in the case of the default AUv3 size, a window with a shorter and wider interface as shown below:



Some hosts like AUM allow you to manually adjust the size of this window. In AUM, just double tap the top of the window where it says “midiSTEPs sequencer” and it will go full size. Or tap and drag the lower right corner of the window to make it exactly the size you want.

I recommend using the full size interface whenever possible, it makes more intuitive sense and looks better. The layout for the alternative wider version is still a work in progress and it looks like it.

This manual will use the full size interface as its reference when describing how things work.

## **Loading into a MIDI AUv3 host**

To use the midiSTEPS MIDI AUv3 plugin, you need to first load it into an AUv3 Host and then connect it to a synthesizer plugin or external MIDI destination. How you do this varies by host, I'll give a few quick instructions for some of the more popular hosts but if you haven't done it before it will require a certain amount of experimentation. Once you get the hang of it, it's quick and painless.

### **Audiobus 3 app**

Audiobus 3 is probably the easiest host to set up, so if you are trying this for the first time and own AB3, I'd recommend starting with that.

First move from the AUDIO section to the MIDI section by pressing the MIDI button in the lower left of the screen. Next press the rounded square with the plus in the middle labelled INPUT. A list of apps and destinations pops up. Make sure you are looking at the "Audio Units", tap the right most tab on the bottom of the list window.

Choose "midiSTEPS sequencer" with a blue icon from the list. The blue icon should fill the rounded square. Tap the icon and the midiSTEPS UI will appear. Use either the midiSTEPS keyboard or the Audiobus keyboard to enter some notes into the sequencer. Just tap some notes in and they should appear. Close the interface by tapping the X in a circle button in the upper left of the screen.

Look at the midiSTEPS icon again and see how it is connected to two other squares with plusses in them. Tap the square that is connected on the far right, and add a synthesizer audio unit to use as a destination.

Tap the PLAY button in Audiobus, the sideways triangle on the bottom at the center. midiSTEPS should start sending MIDI notes to your synth plugin and you should hear them playing.

### **AUM app**

AUM is a very flexible, modular host that is a good choice if you are using several instances of midiSTEPS simultaneously and want to see them all at once. It's a little more complicated to set up but not too bad and once you've figured out how to make it work it all makes sense and becomes pretty easy.

First tap the square with the orange plus on it in the middle of the screen. Then tap "+ MIDI". Now tap the white circle with the white plus on it at the top of the column. Next tap "Audio Unit MIDI Processor". Scroll down until you find the blue icon named "midiSTEPS sequencer", in the "ART KERNS" section, and tap that entry.

You should now have the blue midiSTEPS icon in the circle at the top of the column. Tap it to open the midiSTEPS window. Double tap the grey title bar of the window where it says "midiSTEPS sequencer" to get the full screen interface. Enter a few notes into midiSTEPS by tapping some of its keyboard keys.

Next, connect the midiSTEPS sequencer output to a synthesizer plugins input using AUM's MIDI ROUTING menu, which you can bring up by tapping the icon that looks like a reverse S in the top right.

Finally press AUM's sideways triangle START button in the upper left of the screen. midiSTEPS should start sending MIDI notes to your synth plugin and you should hear them playing.

### **Other MIDI AUv3 host apps**

You can also use midiSTEPS in other MIDI AUv3 hosts such as ApeMatrix, Cubasis 3, Nanostudio 2, etc. Some are easier to set up than others but if you know the basics of loading midiSTEPS to send notes, loading a synthesizer AU to make sounds, and connecting them together, with some experimenting you should be able to figure things out and get it working.

## **Using the AUv3 host timeline**

One big change to midiSTEPS when using it as an AUv3 plugin is that timing and synchronization are handled by the AUv3 host app. Starting and stopping the sequencer happens when the host's timeline is started and stopped. The tempo and any sync with Ableton Link are handled by the host. All sequencer related timing synchronization, such as changing patterns on a particular bar or beat, is based on the timeline of the host.

## **Save and load via AU presets**

Another big change to the midiSTEPS workflow is that saving its sequences is handled by the host using audio unit preset management. You will need to learn how to load and save presets and states within the interface of your AUv3 host of choice to save your midiSTEPS sequences. The good news is that when you create a song out of multiple sequencer, synthesizer and effects plugins and save it to the host, the whole setup can all be recalled easily at one time and you can start right back up where you left off with the same sequences and synthesizer sounds.

## **AU parameter control**

The last big workflow change when using the AU plugin involves using AU parameters rather than MIDI mapping. You can access midiSTEPS parameters such as current pattern, note speed, gate trigger, key maps to sequencer buttons, etc and your host should allow you to map these parameters to any MIDI controller or even another MIDI AUv3 plugin effect.

For instance, if you're using my midiLFOs modulator plugin alongside midiSTEPS, you can have one LFO of the midiLFOs plugin randomly pick new patterns to switch to, while another LFO triggers the gate, a third LFO changes the default note velocity and the fourth occasionally resets the sequence. You can also map buttons like rest, accent and tie to certain keys on your keyboard or a separate MIDI controller so you can use midiSTEPS without touching the iPad.

## midiSTEPS MIDI AUv3 sequencer

### Main sequencer page

The main sequencer page is where you record and tweak your sequences. At the top there are dark grey buttons with several useful sequencer functions that will be explained later in this chapter, and 16 pattern select buttons.



Right below the top toolbar is a grid of sequence steps where you will record your sequences. At first this will be 16 empty squares waiting for your notes. As you enter notes the squares will fill with the note names (C4, F3, etc) of the individual steps. If you record more than 16 steps in a sequence, the display will change to show 64 smaller steps.

## **midiSTEPS user manual**

Below the step display is another toolbar with several buttons related to recording and playing steps. Below that is a keyboard to enter in the actual notes. Give the keyboard a few taps and you'll see the steps get entered into the sequencer.

Let's start with the top row buttons:

### **Clear button**

Tapping the clear button will delete the last sequence step of the sequence. Pressing the button multiple times will slowly delete your sequence, from the last step backwards.

If you press and hold down the clear button for a couple seconds, when you release the button the entire sequence will be deleted.

### **Sync button**

Tapping the sync button will bring the sequence back into sync with the AU host timeline by resetting to the first step at the next sync boundary. The sync boundary is configured in the Options menu under the More tab.

For example if the sync boundary is set to 1 bar, when you reach the next bar of the AU host's timeline the sequencer will reset and start playing the first step again.

This is useful if you have a sequence with an odd number of steps, or are adding and deleting steps as the sequence is playing, and the sequencer gets out of sync with other sequencers that are playing. Pressing sync will (perhaps temporarily) get everything back to playing the same steps at the same time.

### **Color button**

The color button allows you to cycle through several different background colors of the plugin. This is useful if you're using multiple instances of midiSTEPS and want to visually distinguish the parts to help you remember which sequencer is controlling which synth. It's also helpful if you just really hate the color blue.

### **Tools button**

The tools button will bring up the tools popup menu, which allows you to manipulate your sequence in various ways such as moving all the notes up and down, shifting their positions, randomizing them, and duplicating them. For more information on this refer to the Tools popup menu section.

### **Pattern buttons**

The pattern select buttons allow you to choose a different sequence pattern. You can have up to 16 patterns that you switch between as the sequencer plays to create songs. Press the pattern number to change to the pattern you wish to record or play back.

If the sequencer is not currently playing, the pattern switches immediately.

There are various settings that determine when a currently playing pattern will change to the next pattern that's been selected. The sequencer can move to the next pattern immediately, wait for the current pattern to finish before switching, or wait to synchronize before switching. These settings are contained in the Options popup menu that comes up when you press the Options button in the lower toolbar, and will be explained in more detail later in the manual.

### **Sequence step buttons**

The first time you use midiSTEPS, and any time you create a new empty set, you will see 16 light colored squares labelled with a “-“ in their centers just below the top toolbar. These buttons represent the steps in your current sequence. Since your sequence is empty, they are empty.

If you press the keys on the on-screen keyboard below, you will see these squares fill up with notes (eg. C5, E6, A#7) as you tap the corresponding keyboard keys. If you press down a chord on the keyboard, you will see the sequence step fill up with multiple notes.

Each sequence step square will display:

- Step number
- One or more MIDI notes
- Accent, with a slightly bigger and darker note display
- Tie, with a connection between that note and the next one.
- Rest, with a “-“ in the note display
- Start/end boundaries for the sequence, if applicable
- Mute, muted steps will be slightly lighter
- Skip, skipped steps will be significantly lighter
- CC values, three vertical bars display any CC values that have been set

### **Keyboard toolbar**

The keyboard toolbar is located underneath the sequence step buttons. The buttons in this second toolbar generally affect this sequence part or an individual sequence step.

### **Octave buttons**

The “<<“ and “>>“ octave buttons allow you to move the keyboard display to the left or right so that you can play lower or higher notes. Each tap will move the keyboard one octave down or up.



## **Record / Play button**

The Record/Play button lets you switch keyboard input between those three modes by tapping on it.

In *Record* mode, all keyboard input from the onscreen or external keyboards will be recorded into the step sequencer. This is the normal mode where you use the keyboard to record and edit the sequence steps.

*Play* mode is used when you have already recorded a sequence, to tweak steps and change between different sequences. Play mode has two sub-modes, *Thru* mode and *Control* mode. You can switch between these modes using the Thru / Ctrl / CC button described below.

In *Play + Thru* mode, any notes played on the midiSTEPS keyboard or received from MIDI input will be echoed through the midiSTEPS output channel without being recorded into the sequencer. This is a mode you can use to play along with existing loops in a song as you work on it and figure out what notes you will want to eventually record into the midiSTEPS sequencer.

In *Play + Control* mode, incoming MIDI notes are used to change patterns, transpose the sequence, and if you are in the trigger gate mode to trigger the next step as specified below:

Within the pattern change range of the sixteen notes C-1 to D#0, pressing a key will trigger a pattern switch to the pattern number displayed on that note of the keyboard. By default this pattern change will occur once the current sequence finishes playing, but you can also configure when the switch happens in the pattern sync configuration which is covered in the Options Menu Popup section.

Within the transpose range C2-C4, pressing a key on the keyboard will shift the pitches of all notes in your sequence by a certain amount, listed on the display (“transpose -1”, “transpose +5”, etc) above the keyboard.

## midiSTEPS user manual

Sending a C1 note in *gate trigger* mode will play the current step and then advance the sequencer by a step.

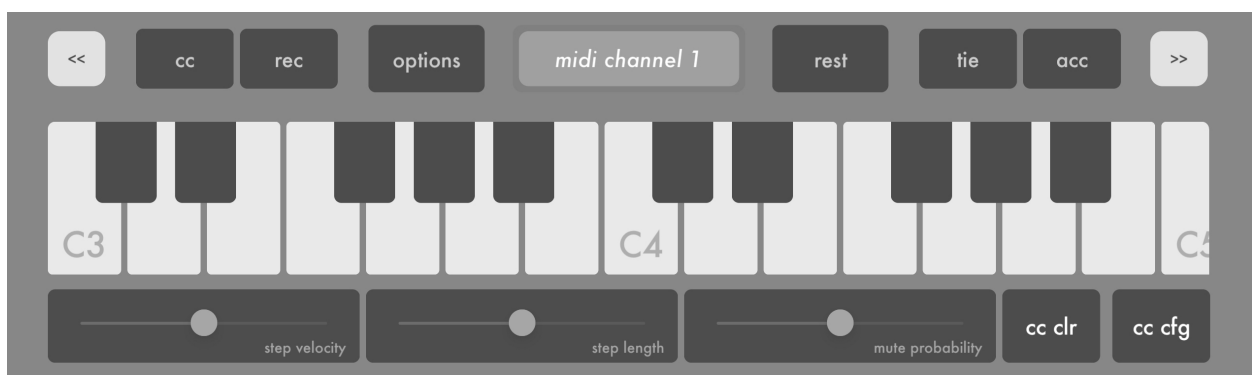
Note that some hosts/controllers use a different notation for naming notes that is off by an octave. The AUM keyboard, for instance, considers a C2 to be what is listed here as C1. So you may need to adjust the above ranges by an octave depending on what controller or sequencer is sending the notes to midiSTEPS. If you are using one instance midiSTEPS to send notes to a second instance of midiSTEPS, the MIDI notes listed are correct. We defaulted to using the same note scheme that Apple does with Logic and Garageband because over the years we've found that disagreeing with the way Apple wants to do things never turns out well for us.

Also note that the buttons on the right of the toolbar are different in *Record* mode (the buttons are rest, accent, tie) compared to the *Play - Thru* and *Play - Control* modes (buttons are start, end, skip, mute). Even if you don't want to change patterns or transpose your sequence, you may want to switch into play mode to access those keys, which are described in more detail in their various sections below.

### CC button (in Rec mode)

Tapping the CC display button causes the keyboard to shrink a bit and three CC control sliders to appear underneath. These sliders are used to set control values that will be sent with each step along with the notes. For instance, if MIDI CC 74 controls the cutoff frequency of the synthesizer you are sending MIDI notes to, by setting this slider you could set a different cutoff frequency for each step in the sequence.

In addition to CCs these sliders can be used to set velocity and step length per step. They can also be used to set a probability for certain things such as mute, skip, accent, or tie to happen to that step. Or you can set a probability



that the sequence resets before playing the step and goes back to the first step, which can give you very interesting random sequence variations.

### CC sliders

By default, slider #1 is set to velocity, slider #2 to step length, and slider #3 to mute probability. Moving the slider will set the control value for the next step that is recorded.

You can change what parameter the sliders control by tapping on the *CC Config* button which will bring up a popup that allows you to pick which parameter to use.

### CC Clear button

The CC clear button can be used to erase all the CC values for that step. This does not set the values to 0 or 127, it erases the current value so that no CC message at all will be sent for this step.

### CC Config button

The CC config button is used to configure the three control values that can be set for each step. By default these are set to Velocity, Note Length, and Mute Probability.

These sliders can be set to:

- Velocity
- Note Length
- Any MIDI CC value
- Mute Step Probability
- Skip Step Probability
- Tie Step Probability
- Accent Step Probability
- Reset To First Step Probability

## **midiSTEPS user manual**

If you are using an external MIDI controller, sending a CC message to midiSTEPS while the CC Config popup menu is up will make a button appear that allows you to easily choose that CC#.

### **Options button**

Tapping the Options button brings up the Options popup menu, which allows you to set many different options for the sequencer. See the Options Menu section below for more info.

### **Midi Output button**

Touching the midi output button will cause the Midi Output popup menu to appear. This menu allows you to set which MIDI output port and channel is used by the sequencer. See the Midi Output Menu section below for more info.

### **Rest button**

Tapping the Rest button enters a new empty rest note step into the sequencer. Multiple taps will enter multiple rests. Note that you can set CC values for rest notes and they will be sent for that step, even though there is no note to send.

### **Tie button**

Touching the Tie button will tie this note to the next step. A tied step will continue playing until after the note from the next step is played. If you tie a step to an adjacent step that has the same note value (eg. step 13 is tied to step 14, and both play C#4) then that note will be extended. Otherwise if there note values are different, a note off for the first step will be sent right after the note on message for the first, allowing you to do things like simulate 303-style slide with portamento, or just easily add some variation to a sequence by having steps with different lengths.

## **Accent button**

Tapping the Accent button will mark the step that is currently being entered as an accent step, which when sent will use the accent velocity instead of the normal velocity. By default the accent velocity is a little higher than the normal velocity, which depending on the synthesizer patch you are triggering could make the note sound a little louder, or with a different cutoff, or whatever parameter you have mapped to velocity.

You can set the velocity values for normal and accented steps in the Options menu.

In *Play - Thru* and *Play - Control* modes, the rest/tie/accent buttons will be replaced by mute/skip/start/end buttons to allow real time manipulation of the sequence as explained below:

## **Mute button**

Pressing the Mute button enters the Sequence Step Buttons above into mute mode, where pressing any individual step will cause it to be muted. When the sequencer reaches that step it will treat it like a rest and play no notes, and also mute any CC values entered for that step. You can mute and un-mute steps as the sequence is playing to vary it in real time.

Tapping the mute button a second time will take you out of mute mode.

## **Skip button**

Tapping the Skip button enters the Sequence Step Buttons above into skip mode. In skip mode, pressing a sequence step button will cause it to be skipped, so that the sequencer will pass over that step entirely. For instance, if you have four steps, 1 2 3 4, and you skip step 2, the sequence will now play 1 3 4 1 3 4 1 3 4 etc. The step is not muted, it is skipped entirely. You can skip and un-skip steps in real time to create some very interesting variations on your original pattern.

Tapping the Skip button again will take you out of skip mode.

### Start button

Touching the pattern toolbar's Start button places the Sequence Step Buttons into start boundary mode. Whichever sequence button you tap in this mode will become the first step in the sequence. If you have entered steps 1 2 3 4 5 6 and tap 3, the sequence will now play 3 4 5 6 3 4 5 6 3 4 5 6. You can change the start step in real time as the sequence plays.

Tapping the Start button again will take you out of start boundary mode.

### End button

Tapping the End button puts the Sequence Step Buttons into End Step mode. In this mode, when you tap a sequence step button it becomes the last step in the sequence. For example, if you have entered steps 1 2 3 4 5 6 and tap 3, the sequencer will now play 1 2 3 1 2 3 1 2 3 etc. You can change the end step in real time as the sequence plays.

Tapping the End button again will take you out of end boundary mode.

## Main Sequencer popover menus

### Tools popover menu

The Tools popover menu appears when you tap the Tools button in the top toolbar, as seen above. Each of the buttons in the menu activates a particular sequence tool function, that will transform the sequence steps in the current pattern in a particular way. The various tools are described below:



### **Shift tools**

The shift left and shift right tools allow you to rotate the steps in the current sequence pattern. When rotating left, the note and CC data in each step will be moved to the step to its left, with the exception of the first step that will be moved to the last. So, for example, if you have four steps A B C D, and shift left, your new sequence will look like B C D A.

Using the shift right tool makes everything move to the right one step except the last step, which now becomes the first step. So our A B C D sequence would be transformed into D A B C.

### **Note up and down tools**

The note up and note down tools allow you to change the pitch of all steps in the sequence, moving them up (eg. D5 would change to D5#) or down (D5 would change to C5#”).

### **Octave up and down tools**

The octave up and down tools work similarly to the note up and down tools, but instead of moving every step in the sequence up or down by a pitch value, they are moved up by a full octave (C5 becomes C6) or down a full octave (C5 becomes C4).

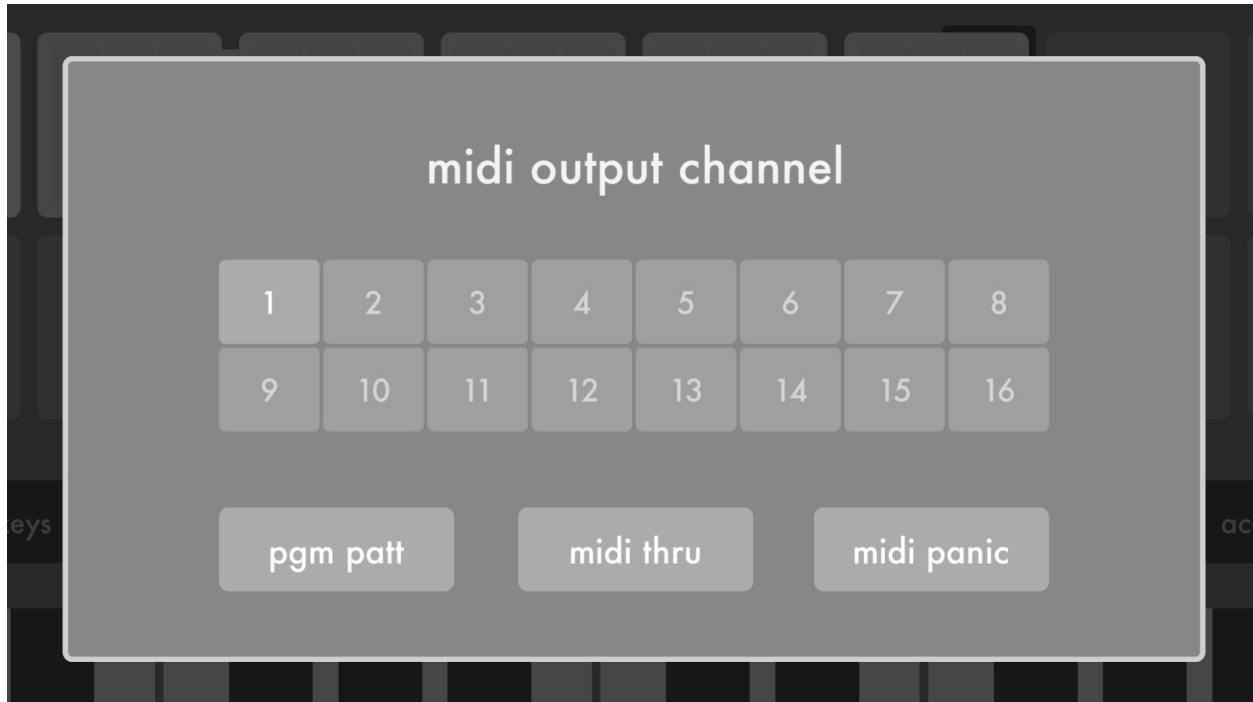
For steps that have multiple notes to play a chord, this tool will octave shift only the highest or lowest note to change the voicing of the chord. For instance C4 E4 G4 will change to E4 G4 C5 when you use octave up. Using octave down would change it to G3 C4 E4.

### **Copy and paste patterns**

The copy and paste pattern tools allow you to move sequences between patterns. Copy will make a copy of the current pattern and put it in a buffer. Close the tools popup, move to a new pattern by pressing a different pattern button, then go back into Tools and tap paste pattern to move the sequence to the new pattern.



## MIDI Output popover menu



The MIDI Output Menu popover appears when you tap the light colored MIDI output button in the lower toolbar, in the middle right above the keyboard.

This is where you set the MIDI channel for the sequencer. All of the MIDI notes, CC, and clock messages generated by the sequencer will be sent to that channel.

## Program Change to Pattern Change

By default when midiSTEPS receives a MIDI Program Change message from 0-15 it will use that message to change the current sequence pattern. Program change 0 would cause midiSTEPS to change the current pattern to pattern 1, program change 10 will change to pattern 11. Program changes above 15 are ignored. If this is turned off then any received program changes are just echoed through to the destination.

### MIDI Thru

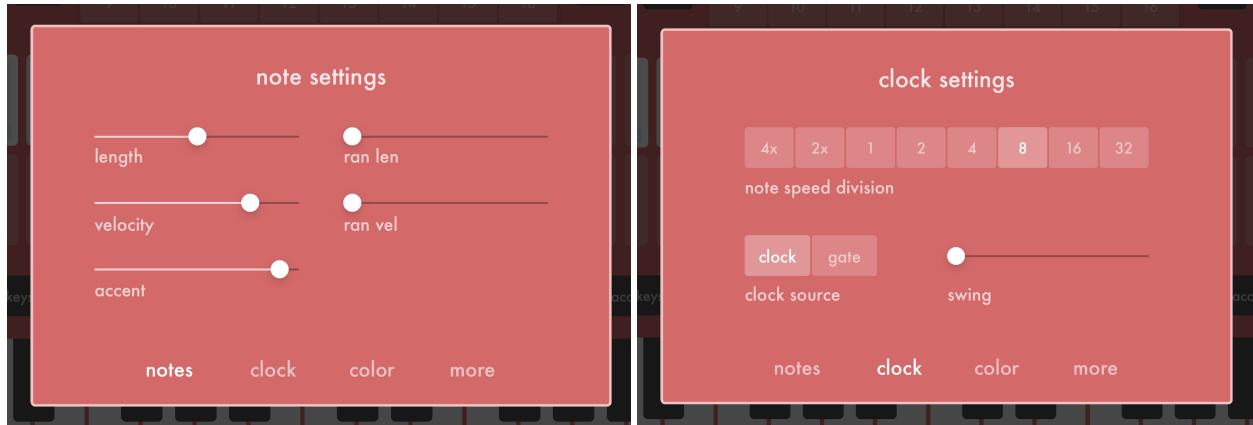
The MIDI Thru button allows you to change how MIDI input is processed. *Input* mode, any notes received in record mode will be recorded both into the sequencer as new steps, and also transmitted to the output port as MIDI notes. For example, if you are using an external keyboard controller, you want it to both record notes into the sequencer and hear the notes you are recording in the synthesizer that midiSTEPS is sending to.

However, if you are using an external synth that has its own keyboard, when you play its keyboard it will already be playing those notes. So if you put midiSTEPS into *Mute* mode by tapping the MIDI Thru key, any MIDI notes received will be recorded into the sequencer but will not be echoed back to the output port. This prevents notes from being played on the synth twice, once by the synthesizers keyboard, and once from midiSTEPS.

### MIDI Panic

The MIDI Panic button sends a MIDI Panic message to the output. Most synthesizers and other MIDI devices will respond to this by stopping what they're doing and turning off all currently playing notes. This is useful if you have somehow ended up with droning stuck MIDI notes and want to turn them off.

## Options popover menu



Tapping the Options button in the lower toolbar brings up the Options Menu popup, which allows you to configure various options for the sequencer. Note that these options are set the same for all patterns.

## Notes tab

### Default note length slider

The note length slider sets how long each sequence step note in the pattern sequence will play for, unless manually over-written with a CC slider. Moving the slider to the left means the note will be very short, to the right the note will last almost the entire step.

### Default note velocity slider

The default velocity slider sets the default velocity amount to use when sending the MIDI notes for a normal, non-accented sequence step (unless the velocity for the step was manually over-written with a CC slider).

### Accent velocity slider

The *Accent velocity slider* sets the default velocity amount to use when sending the MIDI notes for an accented sequence step (unless the velocity for the step was manually over-written with a CC slider).

### Random length variation slider

The *Random length slider* lets you create a little automatic random variation in the length of all the notes being played in your sequence, independent of any step-lock CCs or other variations. You can add some randomness to the note length of each note by moving the slider to the right. All the way to the left is no random variation, sliding all the way to the right gives you extreme randomness.

### Random velocity variation slider

The Random velocity slider works similarly to the random length slider, it will add some random variation to the velocity of each note that is sent out, independent of any step-lock CCs. Left is no variation, right is very random.

## Clock tab

### Note speed division selector

The *Note Speed* option lets you set how long each step lasts as a division of the overall clock. You can set it anywhere from four whole notes (long) to a 1/32 note (short).

### Clock source selector

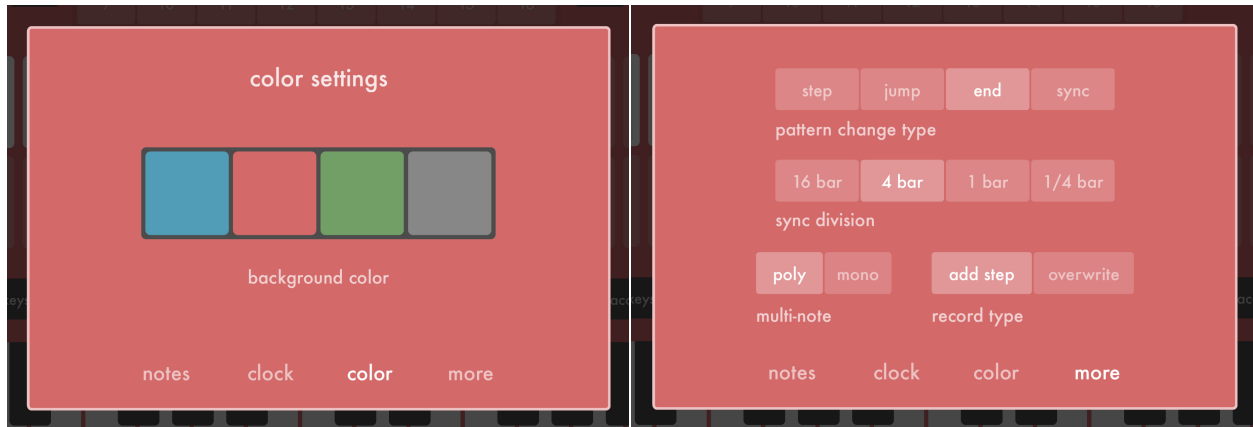
The clock source selector determines when the sequencer moves from step to step and sends out MIDI notes. *Clock* mode is the normal mode and is tied to the AUv3 host app's timeline. When you start the host, the midiSTEPS sequencer will start in sync. *Gate* mode uses incoming MIDI notes to clock the sequencer. You will need to be in *Play - Control* mode to receive the C1 MIDI note (some controllers/hosts such as the AUM keyboard use a notation an octave higher for that same note and call it C2) that will trigger the sequencer to move forward a step. Alternately, you can use the Gate Trigger AU parameter in any mode for the gate.

### Swing slider

Sliding the swing slider sets the Swing amount of the sequencer. 50 is no swing, all steps are equal length. 75 is super swung, very long steps follow by very short ones. 62-66 is about right if you're looking for something nice and groovy. Every other note is swung, so the note speed division will affect the

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swing speed. 1/16 speed notes means 1/16 swing, 1/8 notes is 1/8 swing, etc.



### Color tab

This Options tab allows you to set the background color of the midiSTEPS interface. The original standalone midiSTEPS had four simultaneous parts, each with their own sequencer, each of which had their own color. Since the plugin version can have multiple instances, if you would like to make them use different colors to more easily keep track of them, you can do that here.

### More tab

#### Pattern change type selector

Use this control to select how and when to change patterns.

- Step, change pattern on the next step
- Jump, change pattern on the next step and stay on the same step #
- End, wait until the current sequence finishes and then change pattern
- Sync, wait until you reach the next sync boundary and then change

#### Sync division selector

The *Sync division* control allows you to set when sync boundaries happen. This determines when the sequencer switches from the current pattern to the next one. If you choose 4 bars and have set pattern change type to Sync, pattern changes will happen when the AU host's timeline reaches the next

multiple of 4 bars - so at 0.0, 4.0, 8.0, etc on its timeline. This can be particularly useful if you have multiple sequencers running in your host and want to keep them all in sync.

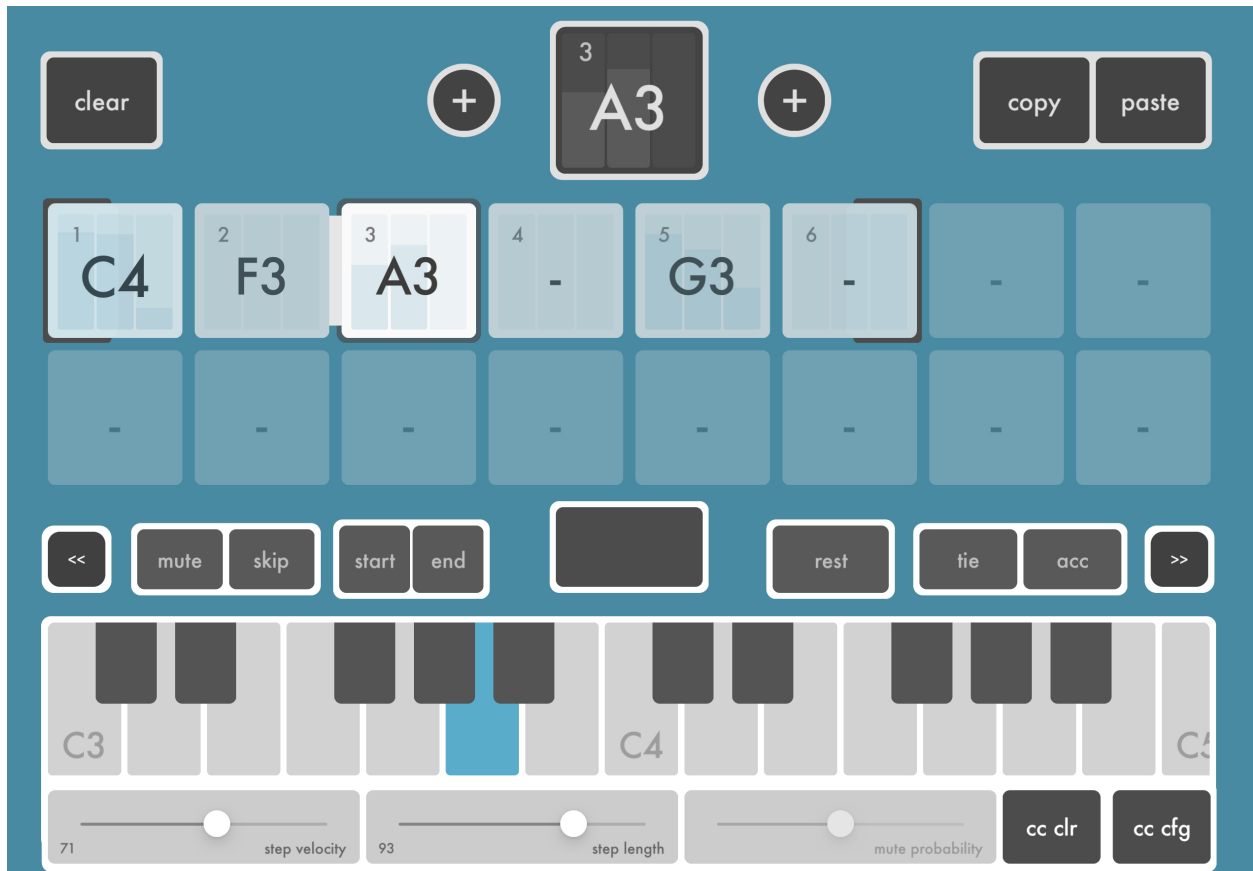
### Multi-note randomization selector

This option is a new feature to the plugin and allows a little melodic variation to your sequences. If set to *Poly* then steps with multiple notes are played as chords, as you'd expect. When this control is set to *Mono* the sequencer randomly picks one of the multiple notes to play, which means the sequence can be a little different each time through. If your note is A3, you could put in A2 A3 and A4, and the step will sometimes use an octave up and sometimes down. Or choose different pitches for different feels. Along with some mute probability, some random length and velocity variation, and sequence reset or skip probability, you can build some sequences that do not sound repetitive at all but still follow certain rules.

### Record type selector

*Record* mode enters new steps normally, by appending them to the end of the sequence. In *Overwrite* mode, if the sequence is already playing then any new steps recorded will overwrite the currently playing step, which allows you to record things in real time and use midiSTEPS as a sort of very primitive looper.

## Edit Sequence Step page



Once you have entered your sequence steps on the main sequencer page, you can then edit and tweak the individual steps using the Edit Step Sequence page.

Getting into the Edit Step Sequence page is easy, first make sure your main sequence page is in Record mode. In the lower toolbar above the keyboard, the second darker button from the left should say “record” and not “transpose” or “pattern”. Now just press and hold whichever step you want to edit and the Edit Sequence Step page pops up allowing you to edit that step. The Edit Sequence Step page will stay up as long as you hold down the step button that called it up, or you can keep it up by pressing hold.

## **Step Display**

At the top of the Edit Step page, in the middle, is the Step Display which displays the step number of the step, the note value(s), and shows any CC values that have been entered.

## **Insert Previous Step and Insert Next Step buttons**

To the left and right of the Step Display are two buttons marked “+”. These allow you to insert a new step into the sequence before (the left + button) or after (the right + button) the currently displayed step.

## **Copy and Paste buttons**

The Copy and Paste buttons are used to, unsurprisingly, copy and paste individual sequence steps. Tap copy to put all of the current note, CC, etc step data into the copy buffer. Move to another step and press Paste to paste that data from the first step into the second step.

## **Clear button**

Tapping the Clear button will delete the current step and remove it from the sequence.

## **Hold button**

Pressing the hold button will keep the Edit Sequence Step page active even if you release the step button that brought the page up. This allows you to experiment with different note and CCs values without pressing down a step button the whole time. The Hold button will flash to remind you that when you're done you just need to press it again to dismiss Edit Sequence Step and get back to the Main Sequencer page.

In the midiSTEPS entry of the Settings App there is a setting to “Auto-hold in step edit”. This will automatically engage the hold function whenever you enter the edit sequence step page.



### **Mute/skip/start/end buttons**

You can change whether the current step is muted or skipped by pressing the mute and skip buttons. Pressing the start button will make this step the first step in the sequence pattern, likewise pressing end will make it the last step.

### **Rest/tie/acc buttons**

Tapping the rest, tie and accent buttons allows you to edit those parameters for the current step. Remember a rest step will not send notes but will still send CCs.

## **Troubleshooting**

midiSTEPs should be working but doesn't seem to be working? These may seem obvious but these are problems I've run into myself at one point or another and I wrote the dumb app. A few things to look for when things go wrong:

### **Check MIDI inputs and outputs**

If you are connected in an AU host to a synthesizer plugin, make sure there's a virtual connection between midiSTEPs and the synthesizer. Very basic I know but lots of times I load both midiSTEPs and another plugin and forget to do this. Also make sure the synth plugin is on a patch that makes noise, that it's channel isn't muted, that your headphones are plugged in, etc.

If you are using an external MIDI interface, such as a USB MIDI interface plugged into the camera kit, first make sure its name appears in your host app as a destination and you're connected to it. Next make sure the external synth is on a patch that makes sound, and that its volume and mixer connection and your headphones/speakers are all working. Finally check the MIDI channel to make sure the channel being sent from midiSTEPs matches the channel the synth is receiving notes on.

### **midiSTEPs stuck in weird mode**

There are a few special modes in midiSTEPs you can get "stuck" in if you accidentally press a button or forget you're in that mode:

- *Play* mode, set with the rec/play button, will bring up different buttons and prevent recording and step editing
- *Play - Control* mode, set with the rec/play and thru/ctrl buttons, will change patterns and transpose your sequence based on MIDI input
- *Transpose* mode once set will stick there until you set it back
- *Overwrite* mode, set in the options menu, affects how things are recorded

- *Gate* mode, set in the options menu, affects stepping through the sequencer

### **Try another sequencer app or controller**

Troubleshooting MIDI can be a real pain in the ass. Typically you have a long chain of sequencers, working through a host, sending notes to a synthesizer, which makes sound that are then routed to headphones or speakers, and any step along this chain can be a problem. If nothing seems to be working and you can't figure out why, the best approach is to eliminate potential problems one step in the chain at a time.

Instead of using midiSTEPS, use your host app's built-in keyboard control and connect it to the synth plugin you want to use. Does that make sound?

If you're using external hardware synthesizers you can do the same thing and use the host app's virtual keyboard to send MIDI out to the synth. If it works, you know the problem is in midiSTEPS or connecting between midiSTEPS and the interface. If it doesn't work, you know the problem is somewhere between the host app, the interface, and the synth. Try connecting an external MIDI controller or using another host app so you can eliminate potential problems one by one.

Another good approach is to use a different MIDI sequencer plugin (Fugue Machine, Bram Bos, etc) in the same host, connect it to the same synth, and see if that works. If it does, then you can more safely assume the problem is with midiSTEPS. If that doesn't work either, you need to figure out where else in the chain the problem might be.

### **Things to try**

midiSTEPS was designed to be a simple sequencer with some interesting additional twists and quirks. Here are some ideas and examples of ways that you can use those additional features.

### **Adding randomization**

At its heart, a MIDI sequencer's job is to repeat the same sequence of notes over and over. A lot of the time this is exactly what you want it to do: have it spit out the notes that you put in. Sometimes though you might want to mix things up a little and create a bit of variation in the patterns to make things a little more interesting. midiSTEPS has several features designed to let you do exactly that.

#### **Random variations to velocity, length**

In the notes tab of the Options menu there are two sliders labeled “ran vel” and “ran len” that control the amount of random variation in MIDI velocity and note length that is calculated into each step. This variation will be recalculated each time the step is played, so the character of the notes coming out of the sequencer are always a little different. This is a great way to add a little subtle humanization to a precise, robotic sequence of notes so they don't sound quite as rigid. As the sliders are moved to right right it can also be used to dramatic effect for a much more random chaotic sequence.

#### **Mute, skip, reset, accent, tie probability**

midiSTEPS also allows per-step probability functions that allow you to have a chance to mute or skip notes, reset the sequence step to the beginning of the sequence, or add an accent or tie to the current step.

Muting notes is a good way to create some variation by occasionally removing or add a new note to a repeating sequence, while keeping the same sequence length and rhythmic structure.

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Using skip probability gives you a chance at changing the length of the overall sequence, so not only will a note not be played, but the entire sequence might fall out of or into sync with other sequences that are playing.

Reset probability can be used to add optional sections at the end of your existing sequence, so that for instance occasionally a fill sub-sequence is played. If you have several steps that have a chance at resetting the sequence you can change the character of that sequence dramatically. You can also use it, like skip, to change the overall sequence length and thus how that sequence syncs up with other sequences, or doesn't sync.

*Mono-Poly* mode, set in the *Options* menu under the *more* tab, can be used to choose only one of several possible notes in a given step. If you have a couple notes of the same pitch but in different octaves this can provide a noticeable but more melodically subtle change. Choosing dramatically different pitches on several different steps can result in dramatically different melodies being played each time through the sequence.

Finally, you can link up external controllers, sequencers, or modulators to various midiSTEPS AU parameters to randomize or change sequences outside of the midiSTEPS sequencer itself. For example you could use midiLFOs to gradually raise and lower the random note velocity variation described above so that some of the time a repeating sequence uses very random velocity values and then it settles back to a fixed programmed velocity, and then back again. You can similarly vary things like note speed, trigger steps at random times with gates in gate trigger mode, etc. Things can get really weird really fast.

## Gate triggers

midiSTEPS is normally triggered by and synced to the clock, which in the plugin is provided by the AU host. But like the SH-101 sequencer that inspired it, midiSTEPS can be configured in the *Options* menu to instead be triggered by incoming Gate messages. Each time a Gate Trigger MIDI note (when in *Play - Control* mode) is received or the AU parameter for Gate Trigger is triggered, the sequencer will move forward one step. The host's timeline will be ignored.

One use for this is setting up interesting rhythmic sequences using another sequencer, or even just another instance of midiSTEPS. Have the first instance of midiSTEPS synced to the host timeline and playing back a sequence of notes and rests, something along the lines of:

**C3 C3 Rst C3 Rst Rst**

Now connect the output of that sequencer to the input of a second instance of midiSTEPS which is in both Gate Trigger and *Play - Control* modes. Fill its sequence with some notes, something like D1 E1 F1 G1. You will get a sequence that goes:

**D1 E1 Rest F1 Rest Rest G1 D1 Rest E1 Rest Rest F1 G1 Rest ...**

Using two sequencers with different sequence lengths, and notes and rests in both, can create some interesting patterns that use all the notes you want, and the rhythm you want, but which repeats a whole lot less. Add in some gate, skip and reset step probabilities in both sequencers and things start to get really interesting.

You can also hook up a MIDI AUv3 modulation effect, such as my midiLFOs plugin, and use that to trigger the gate through AU parameters. Have midiLFOs use a square wave LFO. Map the MIDI CC output of midiLFOs to the AU parameter of midiSTEPS for Trigger Gate. Now your midiSTEPS sequence will play at the rate you set in midiLFOs. Since that rate in midiLFOs can be modulated by other LFOs in the app, you can get sequences that speed up, slow down, randomly go all over the place, etc.

### CC only sequences

You can use midiSTEPS to send out MIDI CC messages on steps without sending out any notes. You can even have the whole sequence be nothing but MIDI CCs, so that midiSTEPS is basically a MIDI modulator effect. Just enter rests for the notes, set one of the control sliders to a MIDI CC of your choice, and edit that slider for the steps you want to send the CC out.

With multiple instance of midiSTEPS this can be used to send per-step automation on one instance of midiSTEPS with a different sequence length or step speed from the notes being played by a second instance of midiSTEPS.

So your two sequencers, both connected to the same synth, will be sending:

**Seq A, notes: 1 C1 2 D1 3 E1 4 F1 1 C1 2 D1 3 E1 4 F1 1 C1 ..**  
**Seq B, CC#46: 1 00 2 16 3 32 4 48 5 64 6 80 7 96 1 00 2 16 ..**

Since these two sequences have different sequence lengths, they will fall in and out of phase and the same note pitch will get different CCs as it repeats. Very nice for Berlin School style electronic music.

If the sequences have different note speeds, you could get two or four or more notes per CC for slowly rising and falling sequences, or vice versa to change a CC as a note is held. And of course you could use more than two midiSTEPS sequencers to make things even more complicated.

### midiSTEPS as a very basic looper

You can use midiSTEPS as a very basic and limited looper by putting it into *Overwrite* mode. This is selected in the *Options* menu, in the *More* tab. Once you're in *overwrite* mode, and the sequence is playing, any notes you record will overwrite the currently playing step.

Put midiSTEPS into Overwrite mode and then set up a blank sequence with 16 rests. Now start the sequence going, preferably with another sequencer in your set playing something else so you have a sense of where you are in the loop. Now record some new notes and they will appear in the sequence in sync with which steps were playing as you recorded, much like a looper.

You can also record the control sliders this way. If you have an existing note sequence sending notes to a synth, set one of your control sliders to a MIDI CC that matches a parameter such as filter cutoff on the synth, get into *Overwrite* mode and start the sequence playing. Now move the slider in time with the sequence as it plays and you will record that filter sweep across the steps, the same CC value will be recorded into the step that you heard as the step played.

Note that the recorded notes and controls will be quantized to each step, and you need to set the length of the loop ahead time with rests. So this is definitely not a traditional looper where you can enter all sorts of notes with various timing nuances and can set the length of the loop dynamically, there are a lot of limitations. Still, it is interesting to play with and can be particularly useful for adding the control parts of the sequence later or adding additional little tweaks and flourishes.