

**PolyPhase** is a *generative sequencer*

A **melody** is generated on the fly by the **Master Track** & copied, with **phase offsets**, to **Follower Tracks**. This structure, along with the interplay of various probabilities, leads to **interwoven melodies & rhythms**

You can **disable** the generation of notes & **draw your own**, or select some of the **randomization functions**

Send **MIDI** to **external hardware**, other **iOS instruments**, or use the included **wavetable synth**

## Master Track (Gold)

- If **GEN** is on, a new note is generated at each *tick* & passed to each **Follower Track** that is **ON**
- If **GEN** is off, no notes are generated, allowing you to **Loop ALL Tracks**
- **LOCK** prevents the **Track** from being affected by the bottom functions
- **RATE** the rate of the sequencer
- **DIRECTION** the direction of the sequencer
- **CHANCE (%)** the probability of whether or not the **Master Track** will create a new note
- **TRANSPOSE (st)** the transposition of the notes
- **LENGTH (Len)** the length of the sequence
- **REST CHANCE (RST %)** the probability of the **Master Track** creating a rest
- **REPEAT CHANCE (RPT %)** the probability of the **Master Track** repeating the previous chosen note
- **VELOCITY (Vel)** the velocity of the notes
- **NOTES** can be drawn in manually, & removed by **Swiping** all the way down
- **CHANGE** most **Track** properties by **Swiping**, & the **Sequencer Direction** by **Pressing**
- **RESET** any **Track** properties by **Double-Tapping**
- **RANDOMIZE** any **Track** properties by **Triple-Tapping**

## Follower Tracks (Gray)

- If **REC** is on, notes from **Master Track** have a chance to be received & added
- If **REC** is off, notes generated by the **Master Track** are ignored
- **LOCK** prevents the **Track** from being affected by the bottom functions
- **RATE** the rate of the sequencer
- **DIRECTION** the direction of the sequencer
- **CHANCE (%)** the probability that a note received from the **Master Track** will be added
- **TRANSPOSE (st)** the transposition of the notes
- **LENGTH (Len)** the length of the sequence
- **PHASE OFFSET (Phs)** the offset of the notes received from the **Master Track**
- **VELOCITY (Vel)** the velocity of the notes

- **JITTER CHANCE (JIT)** the probability the *Follower Track* will randomly transpose the received note from the *Master Track*
- **NOTES** can be drawn in manually, & removed by **Swiping** all the way down
- **CHANGE** most *Track* properties by **Swiping**, & the *Sequencer Direction* by **Tapping**
- **RESET** any *Track* properties by **Double-Tapping**
- **RANDOMIZE** any *Track* properties by **Triple-Tapping**

## CC Tracks

- *CC Tracks* can be viewed with the **CC** toggle on the right
- *CC's* are output to the same **Interfaces / Channels** as the *Master / Follower Tracks*
- By default, the *CC Tracks* are set to modulate the **Chord Key, Chord Type, Morph Seq, & Global Transpose**  
If your **MIDI Input** and **Outputs** are set to *PolyPhase*)

## Bottom Functions

- **Reset Params:** reset *Track* parameters
- **Rnd Params:** randomize *Track* parameters
- **Euclid Seq:** random **Euclid patterns**
- **Rnd Seq:** randomize notes using **custom algorithms & standard drum patterns**
- **Clone Master:** copy the *Master Track's* sequence to all *Follower Tracks*
- **Morph Notes / CC:** randomly transpose notes / CCs
- **Extend Notes / CC:** remove all rests by extending all notes / CCs
- **Same Notes / CC:** make all notes / CCs the same
- **Swap:** randomly swap sequences
- **Reverse:** reverse sequence notes
- **Shift:** randomly shift sequences
- **Prune:** randomly remove notes
- **Half:** halve the active sequence
- **Double:** double the active sequence
- **Collapse:** evenly remove spaces between notes
- **Spread:** evenly spread out notes
- **Unlock / Lock:** unlock or lock *Tracks*
- **REC ON / REC OFF:** enable or disable *Tracks* from generating or receiving notes
- **CLEAR:** delete all notes

## Audio Engine

- Although **PolyPhase** is primarily meant to be a **MIDI Instrument**, there is a versatile **Wavetable Synth** as well
- Toggle the **Audio Engine** with the *speaker icon*
- Toggle the **Wavetable Synth** settings with the *gears icon* on the right
- Depending on which page you are on (**Synth** / **FX**) you can **Reset**, **Randomize** or **Morph** parameter values

## Snapshots (*S1 – S10*)

- Each **Snapshot** stores the **Sequencer Notes**, **Track properties**, and **Note Filter**
- **Hold** to **SAVE**
- **Single-Tap** to **LOAD**
- **Double-Tap** to **DELETE**

**NOTE:** If you load a **Snapshot** with a different **Rate** / **Length** / **Direction** than the current state, the **sequence position** will be restored for each **Track**. Else, only the **notes** will be restored, offering a seamless transition

## Note Filter

- Press the **Power Icon** to toggle **Filter Notes**
- Press the **Notes Icon** to **auto select** a new **Chord Key / Scale** each time the **Master Track** resets. This helps to simulate Chord Progressions
- Press **↑↓** to allow the **Note Filter** to transpose the sequence notes when **auto-selecting** a new **Chord Key / Scale**
- At the top is your **Global Key / Scale**
- Tap the **Global Key / Scale** to bring up a drop-down menu
- On the bottom are various **Chord Keys** and **Chord Types** you can toggle
- If both a **Chord Key** and **Chord Type** are selected, then this **Chord** is passed to the **Global Key / Scale**, where it will be filtered again (if **Filter Notes** is toggled)
- Press the **arrow icon** to set the notes in each **Custom Scale**
- **Double-Tap** a **Custom Scale** to load it
- **Filter Wrong Notes To Root:** notes not in the **Global Key / Scale** will be filtered to the root note instead of the nearest note.  
Enabling this can help emphasize the **Global Key**, and may offer more musical results
- **Same Chord Key Chance:** the probability that the **Note Filter** will choose the same **Chord Key**
- **Transposition Chance:** the probability that the **Note Filter** will transpose a sequence
- **Transposition Range:** the range of transposition if the **Note Filter** chooses to transpose a sequence

**NOTE:** If the selected **Chord Key / Scale** is in the current **Global Key / Scale**, then it will be **blue**, else, it will be **red**

**NOTE:** It's recommended to leave **Filter Notes** enabled

## MIDI

- **MIDI Input / Output** and **Clock** settings can be accessed by pressing the top **MIDI** button
- To view the external **MIDI Control** options, press the top left **wrench icon**

**NOTE:** When **sending clock to PolyPhase**, you must disabled the **internal clock generation**. Else, you will get **double ticks**

**NOTE:** Some apps can **receive clock from PolyPhase** on it's **PolyPhase** port. If so, you do not need to select that app's Port under **Clock Send**. If you do, you will get **double ticks**

**NOTE:** **Snapshot**, **Global Key / Scale** & **Chord Key / Scale** can also respond to **Note Events**. Click **CC / Notes** to toggle

**NOTE:** Each **Track** can **sequence 2 CCs**. These **CCs** are **only sent internally** to modulate the app's **Parameters**. To send **external CCs**, use the **CC Tracks**

## Advanced Track Options

- To view the **Advanced Track Options**, press the **wrench icon** on the left
- You can enable / disable the sequencing of **CCs**, set the **CC #** and it's **range**
- **Constant Note**: the **Track** will always send out the **chosen note**, regardless of any transposition or **Note Filter** settings. This is useful to sequence external drums
- **Note Range**: if the side toggle for **Compressed Range** is enabled, this sets the **range** that the **Master Track** will generate notes
- **Preserve Structure**: when **shifting up** or **down**, the **intervals** of the notes will be **preserved** and the **Transposition** will be affected instead (if necessary)
- **Repeat MIDI**: normally, a long note is treated as a single **MIDI** note and will not re-trigger at each step. If this is toggled, **MIDI** will be re-triggered at each step
- **Follow Master**: **Follower Tracks** will behave the global **Follow Master** side toggle

## Options

- **Humanize Velocity**: the amount the **Velocity** will be **humanized** relative to the **Track's Velocity** (**Double-Tap** to **reset**)
- **Global Transpose Increment**: the amount the **Global Transpose Slider** will change by (**Double-Tap** to **reset**)
- **Automatically Dim UI**: some menu items and side toggles will be dimmed when unused
- **Display Parameter Popup**: editing **Track Parameters** will display a popup with the **Parameter Name** and **Value**
- **Snaps Load Steps**: **Sequencer Notes** are loaded with the **Snapshot**
- **Snaps Load Note Filter**: **Note Filter** values are loaded with the **Snapshot**
- **Snaps Reset Position**: **Sequencer Positions** are **reset** when loading the **Snapshot**
- **Snaps Load Global Transpose**: the **Global Transpose** is loaded with the **Snapshot**
- **Tempo Drift Protection**: the **Synced Delays** are only updated when the Tempo changes by a significant amount. This prevents constant delay pitch-shifting due to **unstable external MIDI Clock**. This should be **OFF** if you're using the **Internal Clock** or have a stable **external MIDI Clock**
- **Note-Offs MIDI Purge**: some hardware synths won't be able to process the 128 note-offs sent out during **Sequencer Stop / Panic**. If so, disable this option. The CCs for **All Notes / Sounds Off** will be used instead
- **Latch Global Transpose**: the **Global Transpose Slider** won't reset to 0 on release (**Double-Tap** to **reset**)
- **CC Tracks Don't Output Externally**: the **CC Tracks** will only affect **Polyphase's** internal **Parameters / Functions**
- **Load Included Presets**: load the included **Presets** when the app launches
- **Euclid Seq Can Affect Length**: allows the **Euclid Seq** function to affect the **Track's** length
- **Rnd Seq Can Affect Length**: allows the **Rnd Seq** function to affect the **Track's** length

## Transport (20 – 300 bpm)

- **Swipe Left / Right** to change the **BPM** by whole numbers
- **Double-Tap** to **RESET**
- **Hold** to manually enter in an exact **BPM**
- **Tapping STOP** when the **Sequencer** isn't playing will fix any **hanging MIDI notes** and silence the **Audio Engine**

**NOTE:** If **Clocked Externally**, the **BPM** will be **red** and unchangeable

## Save / Load

- A **Preset** consists of **All Tracks**, **Snapshots**, **MIDI Control settings**, **Note Filter settings**, and any **Options** that affect the **MIDI output**
- **Refresh Icon:** automatically generate a new **Preset Name**
- **Clock Icon:** use the last saved / loaded **Preset Name**
- **Eraser Icon:** erase the **Preset Name**

## Other Side Controls

- **Link Icon:** *Follower Tracks* will reset their position when the *Master Track* does
- **Compress Icon:** the *Master Track* will limit itself to a **low range of notes**
- **Globe Icon:** changes made to **Track properties**, except *Direction*, affect **All Tracks**
- **Hand Icon:** **Track properties**, except *Direction*, will change by **intelligent discrete** amounts
- **SUS:** sustains **MIDI notes**
- **Inf / .5n / 1n / 2n / 4n / 8n:** determines the length of the **Sustain**. If **Inf**, then **MIDI notes** will sustain forever. If another time resolution is chosen, notes will be turned off after that time has passed. This is a global setting applied to **All**

### *Tracks*

- **Eye Icon:** show / hide **Track properties**
- **PANIC:** fix **hanging MIDI notes**

## Tips & Tricks

1. Want **interesting polyrhythms**? **Master Track OFF** → **Random Settings / Length** → **Euclid Seq**
2. Try **Master Track OFF** → **Random Settings / Length** → **Euclid Seq** → **Clone Master**
3. Once you are **Looping** the **Tracks**, try **Morphing** the notes & playing around with the bottom **Sequencer Functions**. The **Undo / Redo** buttons at the top are also musically useful!
4. Try **Extend Notes** → **Prune** for interesting rhythms
5. If you want to **Loop All Tracks** and prevent the **generation of notes**, turn the **Master Track OFF** or press **DISABLE** in the bottom **Sequencer Functions**
6. You can **Lock** a **Track** to prevent it from being affected by the bottom **Sequencer Functions**

## Common Questions

1. If you want to **connect PolyPhase** to your computer over **WIFI**:
  - Select the **Network Port** for all **MIDI Out tables**
  - Using macOS's **Audio MIDI Setup app**, create & have your iPad join a **Network Session**
  - For those with Windows PC's, **rtpMIDI** can be used in a similar fashion
2. If you want to **sync PolyPhase** from **AUM**:
  - Enable **AUM's Send MIDI Clock** & ensure the **PolyPhase** port is checked
  - Disable **PolyPhase's Internal Clock Generation**
  - Ensure the **PolyPhase** port is highlighted under its **Clock Receive** table
  - **PolyPhase** will now respond to **MIDI Clock / Transport Messages**
3. **AUM** instruments stop receiving **MIDI**:
  - This is most likely due to a **polyphony** issue
  - Ensure your instrument is capable of high **polyphony**, especially if you are using multiple **PolyPhase Tracks**
  - If you are using **PolyPhase's MIDI Sustain** feature, try decreasing the **Sustain Time** or disabling it