K-Teck

Iosif v1.1
Interference Pattern Sequencer

User Guide

K-Teck lives at

https://k-teck.co.uk

Hey there…

Welcome to the K-Teck Iosif user guide

This guide should tell you everything you need to know about Iosif's functions and underlying principles

What it won't tell you is how very powerful and easy to use Iosif is

You'll need Ableton Live and Max for Live to make Iosif work - that's Live + M4L or Live Suite

Iosif v1.1 was built in Live 10.1.30 using Max 8.1.7

Keep them up to date because I do

For further information contact admin@k-teck.co.uk

What is Iosif?

- Iosif is a monophonic step sequencer - generating MIDI Note Data - one note at a time

- To do this Iosif generates a complex rhythmic pattern of Trigger Pulses from an 'Interference Pattern' formed by the interactions of 2 or 3 numbers

- Each Trigger Pulse steps through the Scale Scan Module to output a MIDI note

Quick guide

1. Insert Iosif into a MIDI track followed by either an Ableton Live Instrument or a VSTi or send the MIDI to a hardware synthesiser

2. Hit Play on Live's Transport

3. Move the Pattern Faders around

4. Listen

5. Move things around again

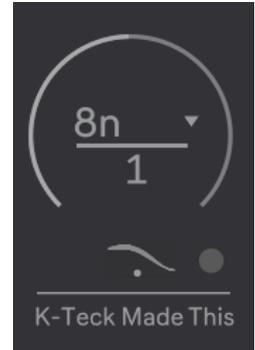6. Listen to that

7. Rinse and repeat

8. That's about it… :)

Iosif in detail

Clock

Iosif has a clock which emits a series of pulses at regular intervals

- This clock sticks to Live's transport and is sample accurate

- The image to the right shows the Clock Rate set to 8n which equals 8 pulses to the bar

| 64n	8nd
64nd	4nt
32nt	4n
32n	4nd
32nd	2nt
16nt	2n
16n	2nd
16nd	1nt
8nt	1n
8n	

- There are many other Clock Rates available, including triplets=nt, and dotted note=nd, values

- The number below the Clock Rate is a Clock Divider: 2 = 1/2 the selected clock rate, 3 = 1/3 and so on to 16

- Using the Clock Divider it is possible to generate very slow sequences

The Dot to the right of the K-Teck eye, when switched on, bypasses the internal clock and enables any MIDI Note Input to act as a Clock Pulse
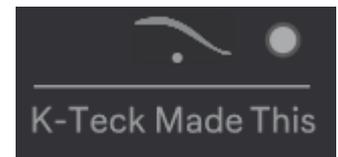
Swing

- Iosef's clock also has a swing function

- This will offset the timing of every second Clock Pulse and is funky

- Or not... try it
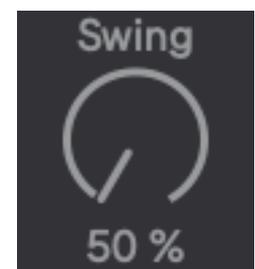
<u>Clock Pulses and Trigger Pulses</u>
<u>(sorry about this but the difference is important)</u>

- Clock Pulses are emitted by the Clock at regular intervals as defined by the Clock Rate and Clock Divider settings or

- With MIDI Note Input enabled, a single Clock Pulse is emitted for every MIDI Note received

- The small grey markers at the top of the central display show the clock pulses

- Clock Pulses are the silent heartbeat of Iosif
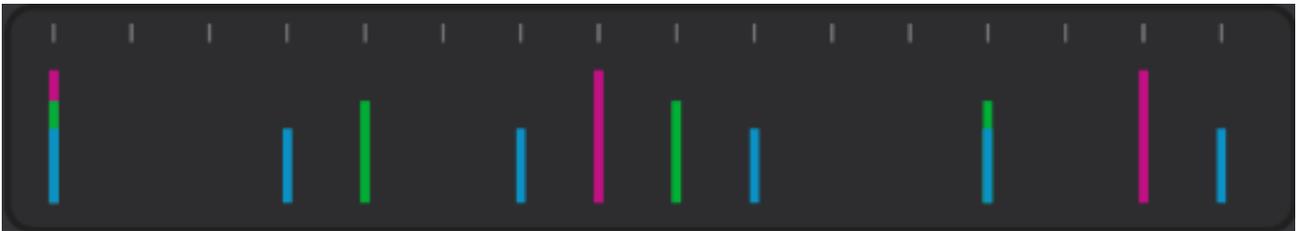
- The image below show a 16 Clock Pulse sequence

- Trigger Pulses are output by the sequencer as indicated by the Pink, Green and Blue markers on the central display

- The image above shows a pattern of 10 Trigger Pulses over 16 Clock Pulses

- The Trigger Pulses are sent to the Scale Scan Module to trigger the notes

- Make sense?

- Read on…

How the Pattern is Made

- The Clock Pulses are counted out by 3 separate Pattern Counters

- Each Pattern Counter resets every 1-15 steps as defined by the coloured Pattern Faders

- The numbers beneath the Pattern Faders show the fader value and can be automated by Live or modulated by other Max for Live Devices

- The 3 coloured boxes above the faders switch the corresponding fader on and off

- Deactivating one or more faders removes the Trigger Pulses from the pattern but the Product remains the same

- Every time a counter resets a Trigger Pulse is sent to the Scale Scan Module to play a note

- The Pattern Module on the right shows the counters set to 7, 4 and 3

- This produces a non-repeating Pattern of Trigger Pulses 84 Clock Pulses long

- 7*4*3 = 84 Trigger Pulses and is called the Product

Product and Manual

- Product is the product of the 3 Pattern Counter values multiplied together

Product Manual
84   16

- The Product sequence produced has no repetitions until reaching the end and starting again

- Manual is a user selectable sequence length, in Clock Pulses, and plays from the first step of the Product sequence

- If Manual is selected, the number to the right can be dragged between 1 and the value of the Product

- Shown below is a Manual sequence of 16 Clock Pulses @7*4*3
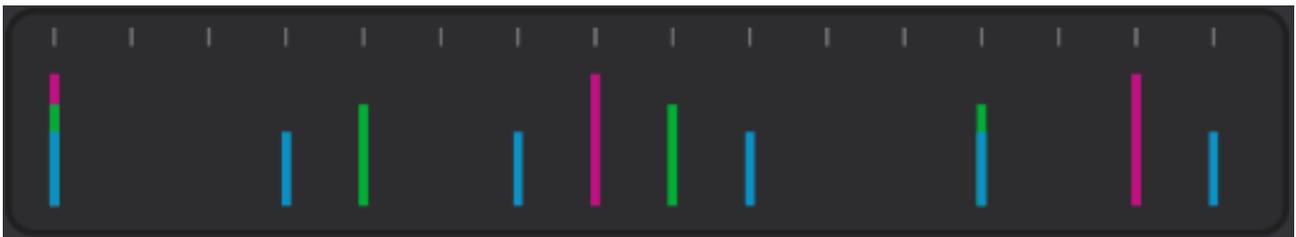
Advance

- Selecting a value of 1 on the Advance dial will move the start point of the Manual sequence to step 2 of the Product sequence

Advance

0

- The Advance dial goes from 0 to the value of the Product

- Using this method it is possible to select, and play as a loop, any region of the Product sequence in conjunction with the Manual value
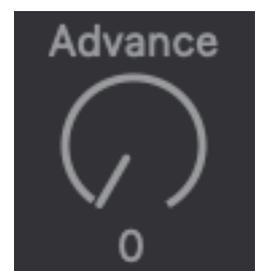
<u>Velocity</u>

- Each Pattern Counter has an associated Velocity value

- These values are defined using the Velocity Faders in the Ranges Module

- Velocity is a number assigned to a MIDI note representing how hard a 'key' is hit

- But as we use step sequencers we don't need to think in those terms we can assign Velocity to any damn thing we like thank you very much


- On the other hand…

- The receiving MIDI instrument may assume you 'play' it and have parameters assigned to Velocity - often volume and tone related

- The velocity of a Trigger Pulse is also shown by the height of the marker in the central display

- Where more than one Trigger Pulse occur at the same Clock Pulse, see Trigger Pulses 1 & 8, the highest Velocity value will be applied to the note triggered

Scale Scan

- The Scale Scan Module is a very powerful and unique system of note selection

- It was developed to replace the more 'traditional' hardware style approaches used in software sequencers

- Every value in the Scale Scan Module can be automated/modulated

- The Scale Scanner counts Trigger Pulses from 1 to the value defined by the Range controls at the bottom of the module and then resets the count
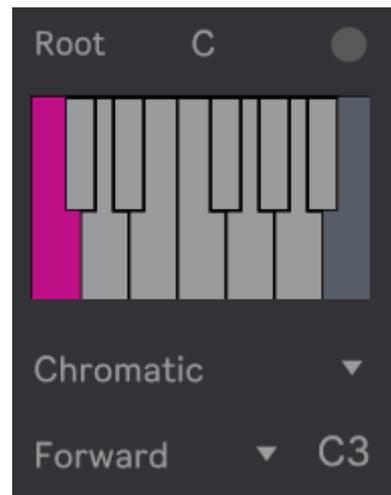
- Range is set by the two note values at the bottom of the Ranges Module

- Left sets the low note, right sets the high note

- The final note output is shown to the right of the Direction dropdown

- When the low note value is changed the high value will shift relative - maintaining the range set between them

- This range value is modified by the number of notes in the selected scale

- eg: Major Scale = 7 notes/octave, Minor Pentatonic = 5 notes/octave

- There are a few scales available in the dropdown menu below the keyboard display

Skip

- This count can be further modified by the Skip control

- Skip is a 'Count Every' function starting at 1

- Skip 3 counts 1, 4, 7 and so on
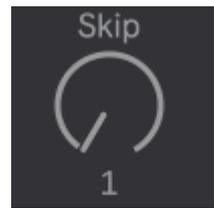
Direction

- This controls the direction of the count through the Scale Scan Module

- This is a looping count, bound by the Scale, Range and Skip settings

- Forward starts at the first note in the Range and Backward begins at the last

- Pendulum begins at the first and swings between first and last, never resting

- Palindrome is similar to Pendulum except it plays twice at each end, playing the complete sequence forwards and then backward

- Random is computer-generated quasi-random nonsense

- Wander and Drunk are combinations of Forward and Random. They both reach the end of the sequence but take a few detours along the way
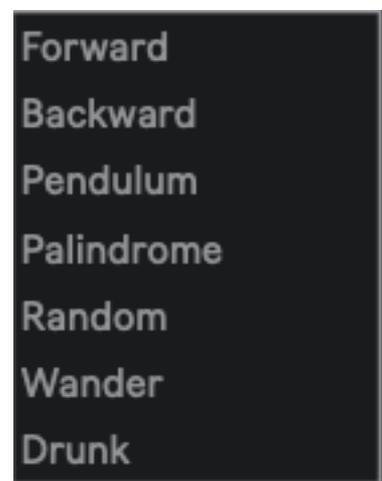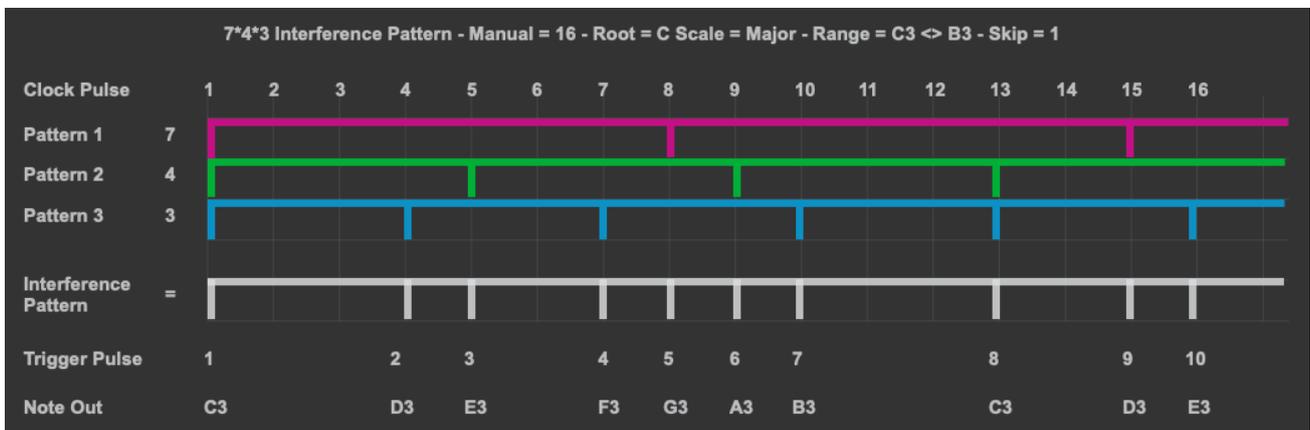
Gate & Chance

The Gate dial selects the duration of the note output. At 100% MIDI Note Off occurs just before the following Note On message
So the note may extend across several Clock Pulses – Trigger Pulse to Trigger Pulse
The Chance dial attaches a percentage probability of any note occurring

What is an Interference Pattern?

- Joseph Schillinger (1895-1943) developed this concept as part of a complete mathematical system for the arts

- The Interference Pattern is the rhythmic pattern generated by the 3 values

- Iosif combines Schillinger's Interference Patterns with K-Teck's Scale Scan Module

Some Examples

7*4*3 Interference Pattern - Manual = 16 - Root = C Scale = Major - Range = C3 <> B3 - Skip = 1

Pattern: 7*4*3
Manual: 16
Root: C
Scale: Major
Range: C3<>B3
Skip: 1

7*4*3 Interference Pattern, Manual = 16, Root = C, Scale = Major, Range = C3 <> B3, Skip = 3

Clock Pulse		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Pattern 1	7																
Pattern 2	4																
Pattern 3	3																
Interference Pattern	=																
Trigger Pulse		1			2	3		4	5	6	7			8		9	10
Note Out		C3			F3	B3		E3	A3	D3	G3			C3		F3	B3

Pattern 7*4*3
Manual 16
Root C
Scale Major
Range C3<>B3
Skip 3

Further reading: Schillinger.J; The Mathematical Basis of the Arts; Da Capo Press 1943